Renal Pathology lab

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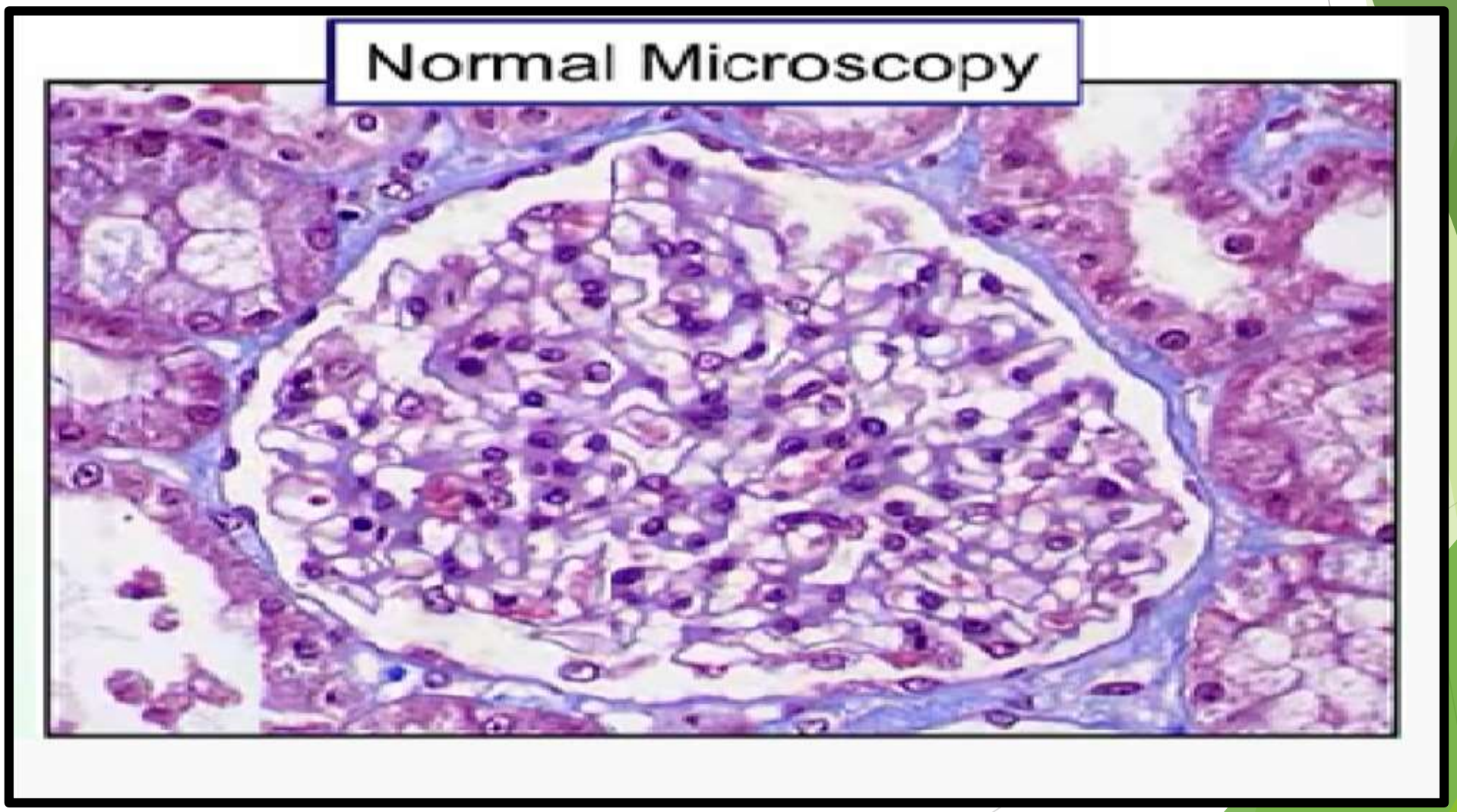
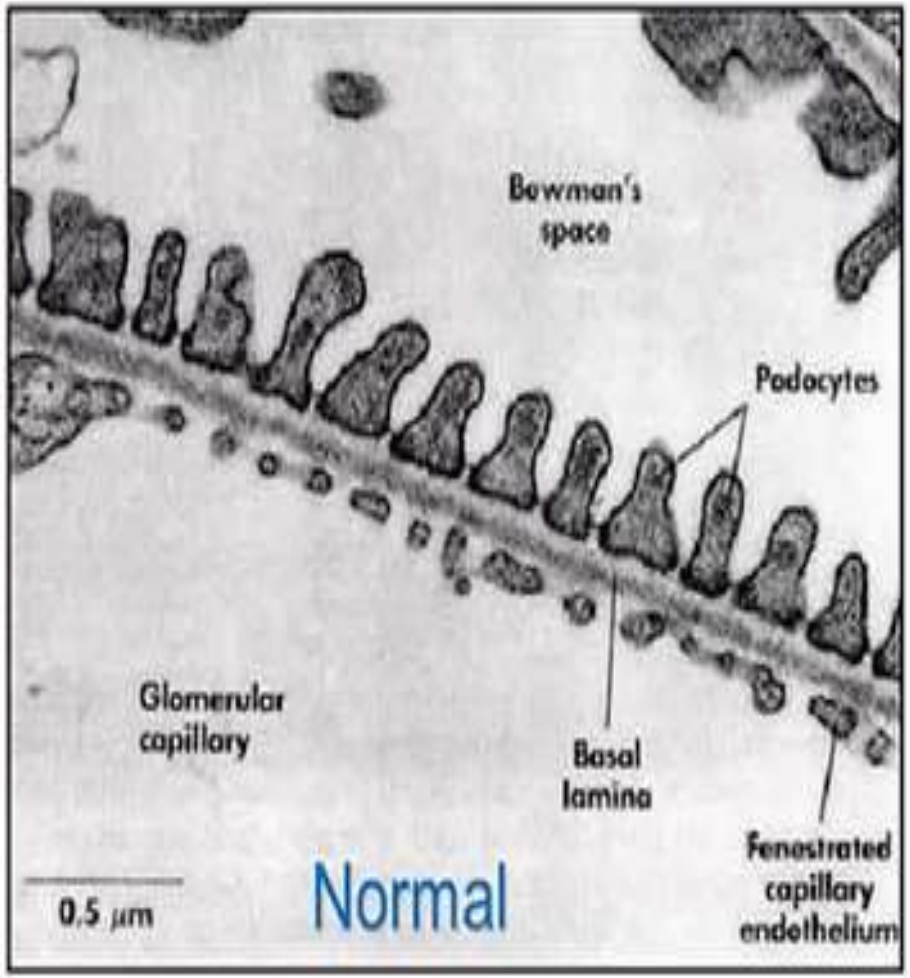
Minimal Change Disease

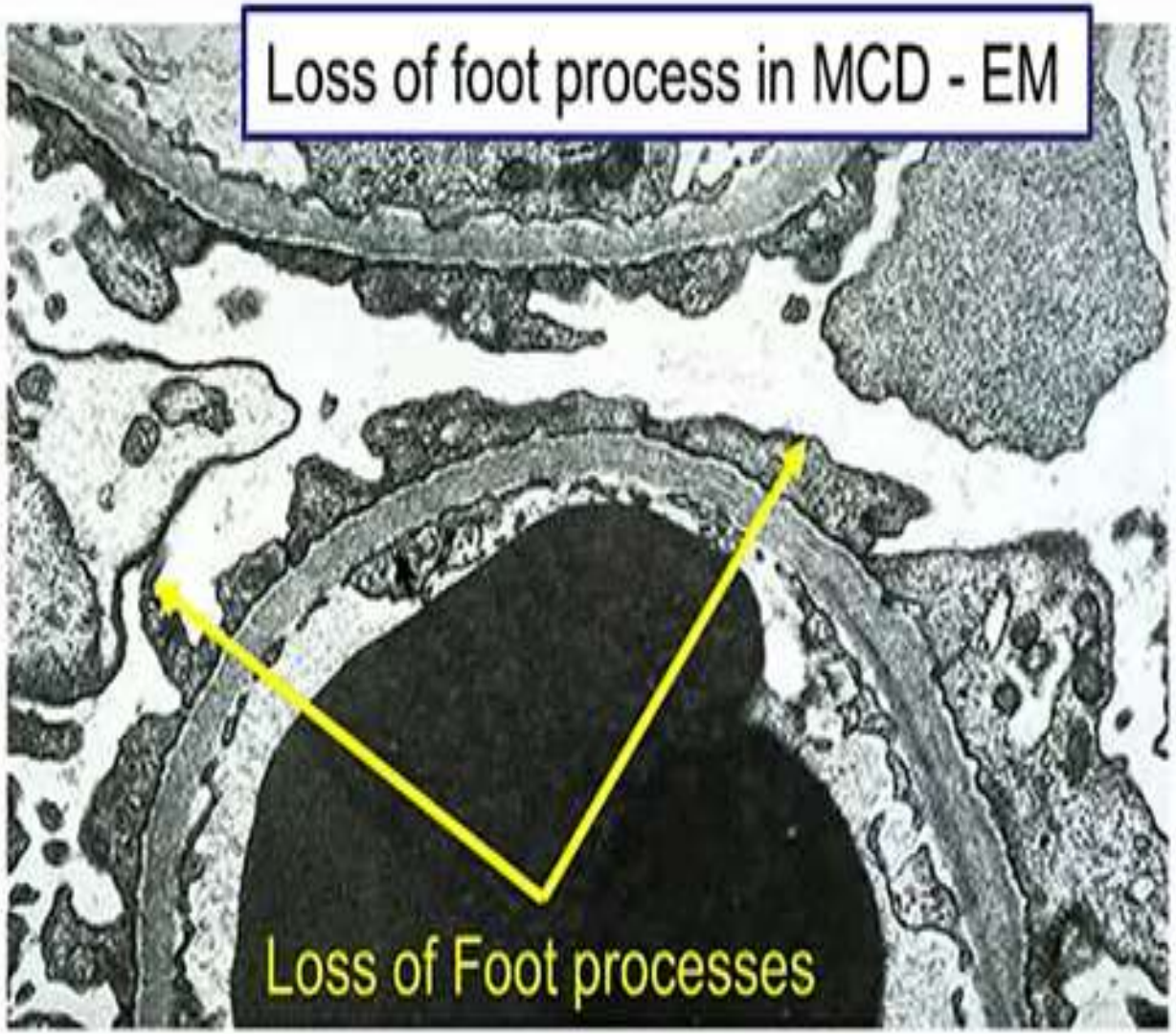
Most common Nephrotic syndrome in children



Minimal Change Disease

Effacement of foot processes/podocyets in EM

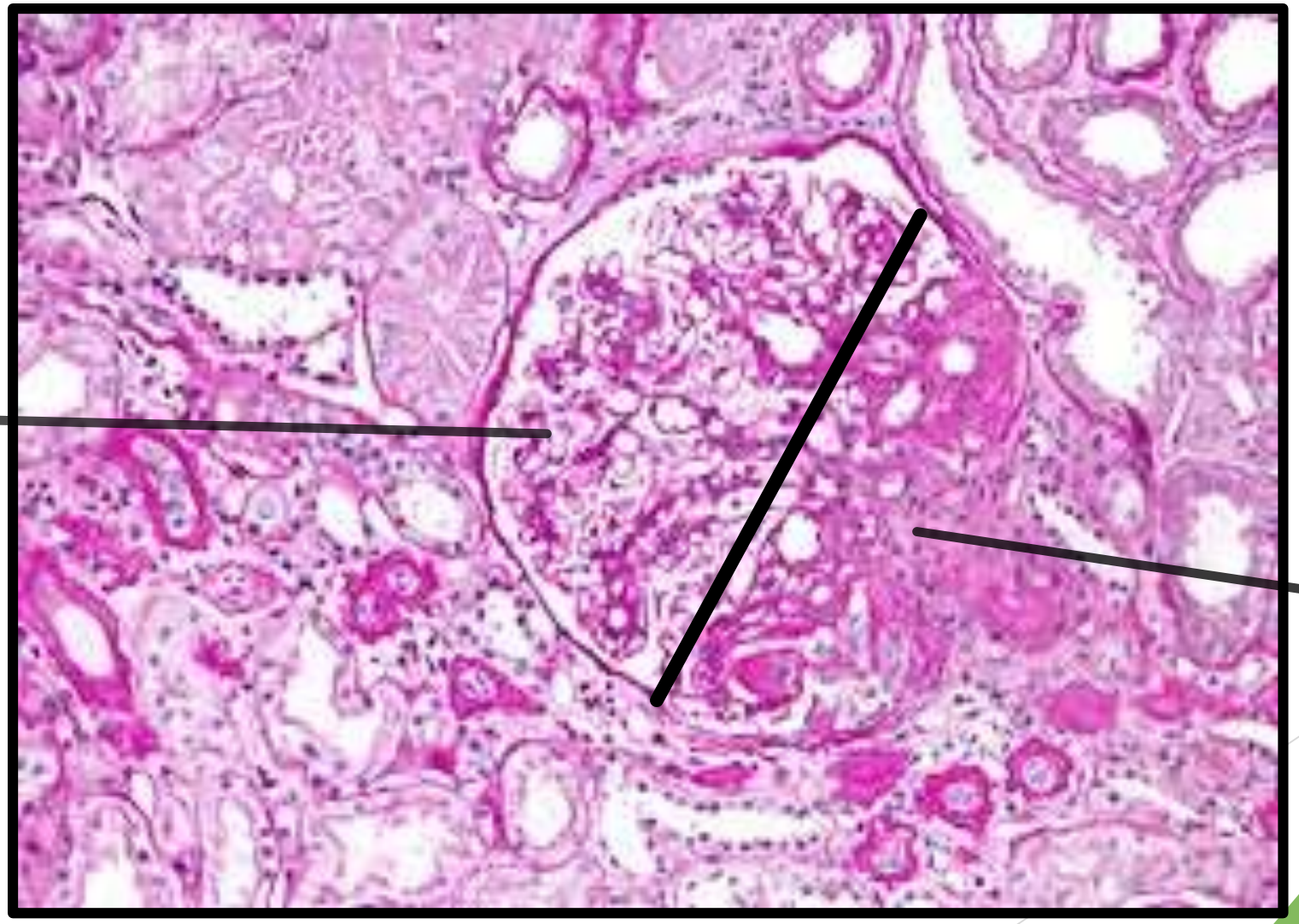




FOCAL SEGMENTAL GLOMERULOSCLEROSIS (FSGS)

Most common Nephrotic syndrome in adult

H& E



Normal segment of glomerulus

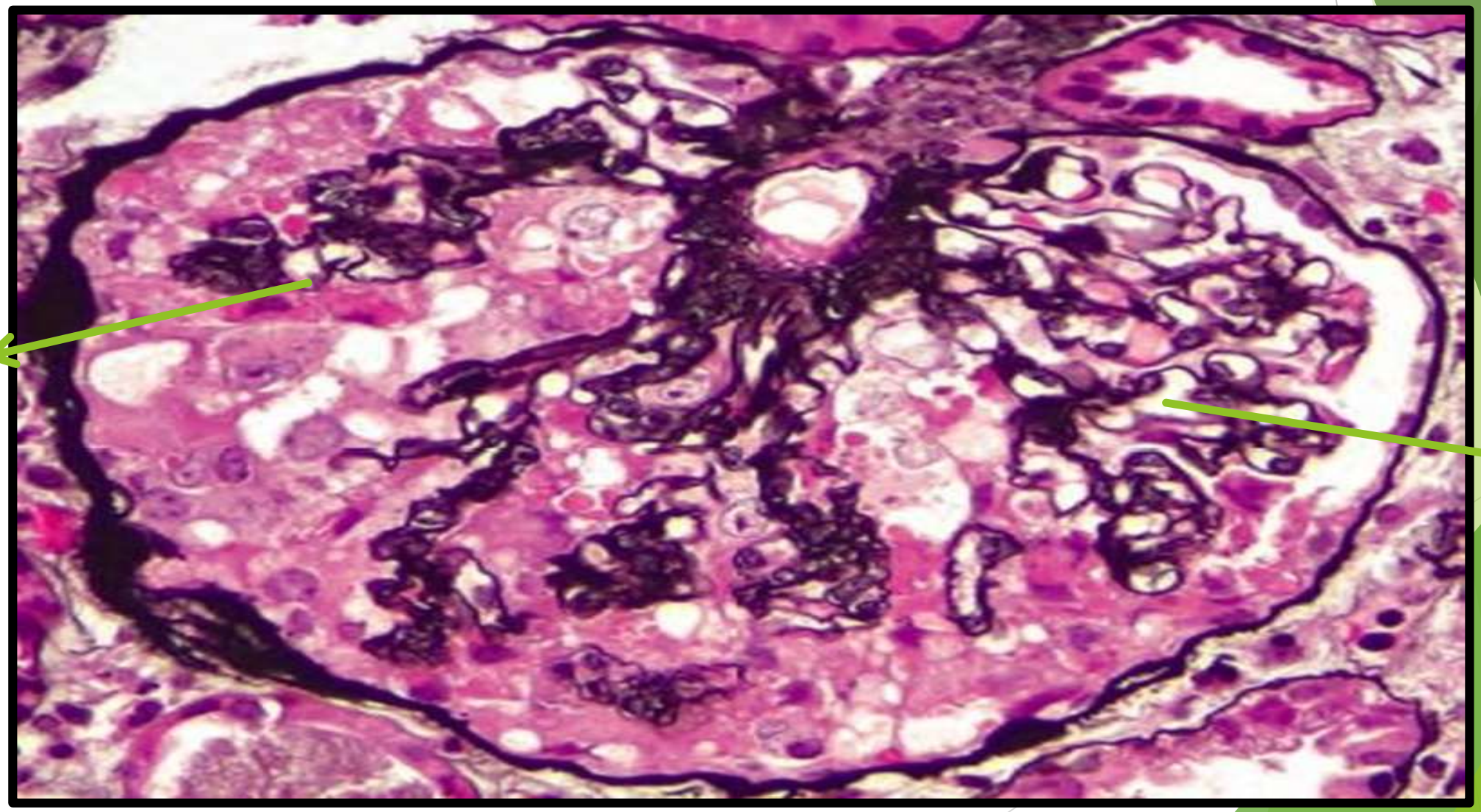
**Most common glomerulonephritis in general is IgA nephropathy.

Sclerosed segment

FSGS – Morphology

Sclerosed segment of glomerulus doesn't absorb the stain

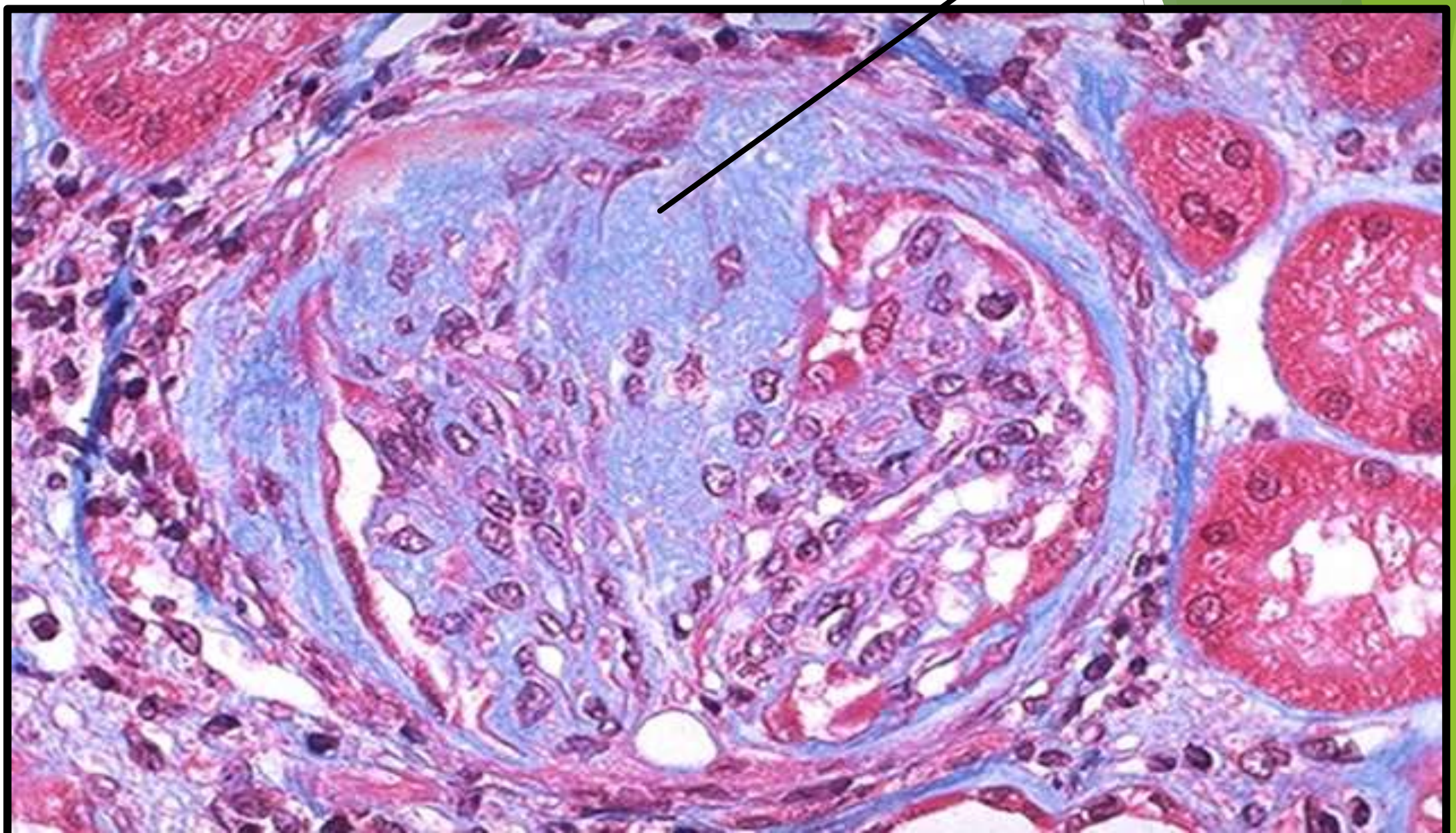
(silver stain)



FOCAL SEGMENTAL GLOMERULOSCLEROSIS (FSGS)

(trichrome stain)

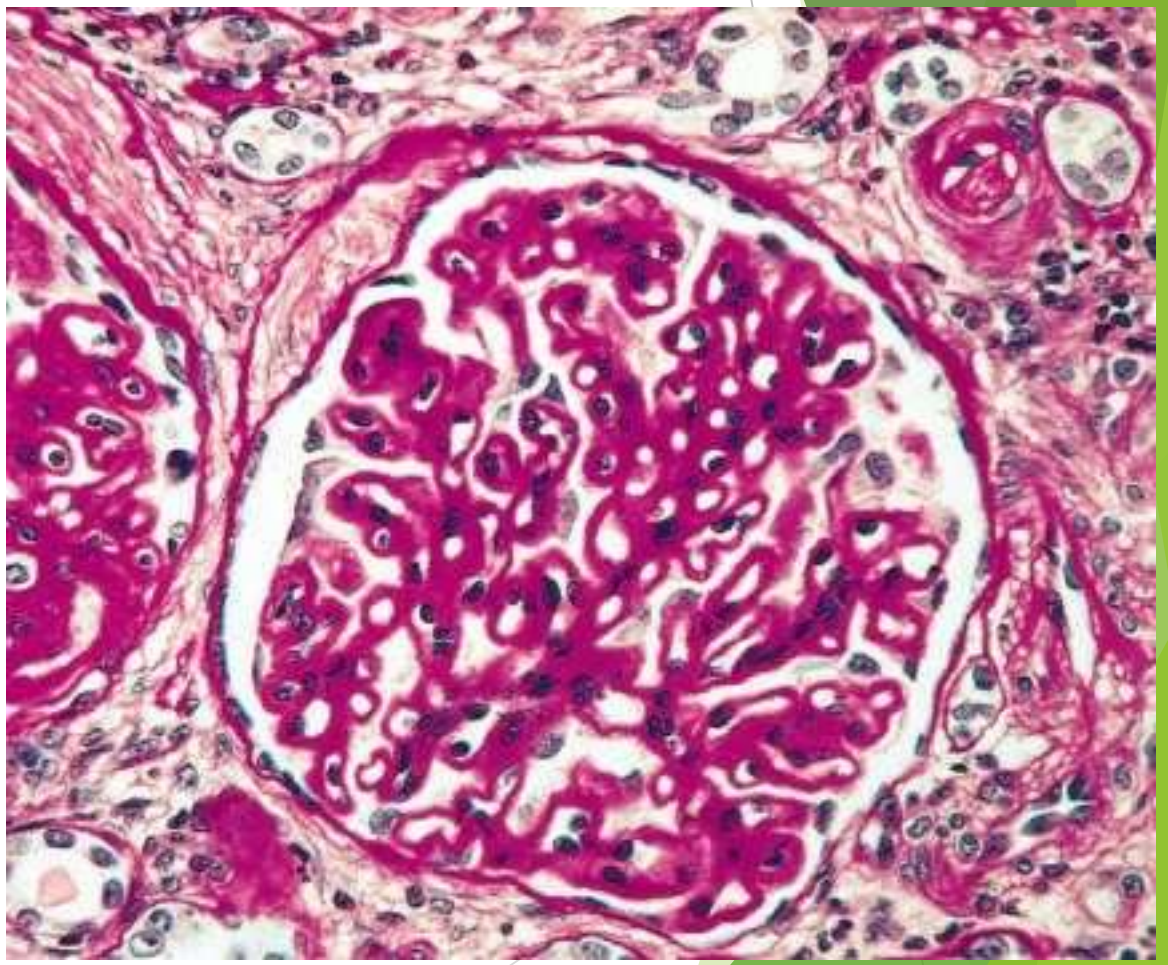
Used to highlight fibrosis



Membranous GN

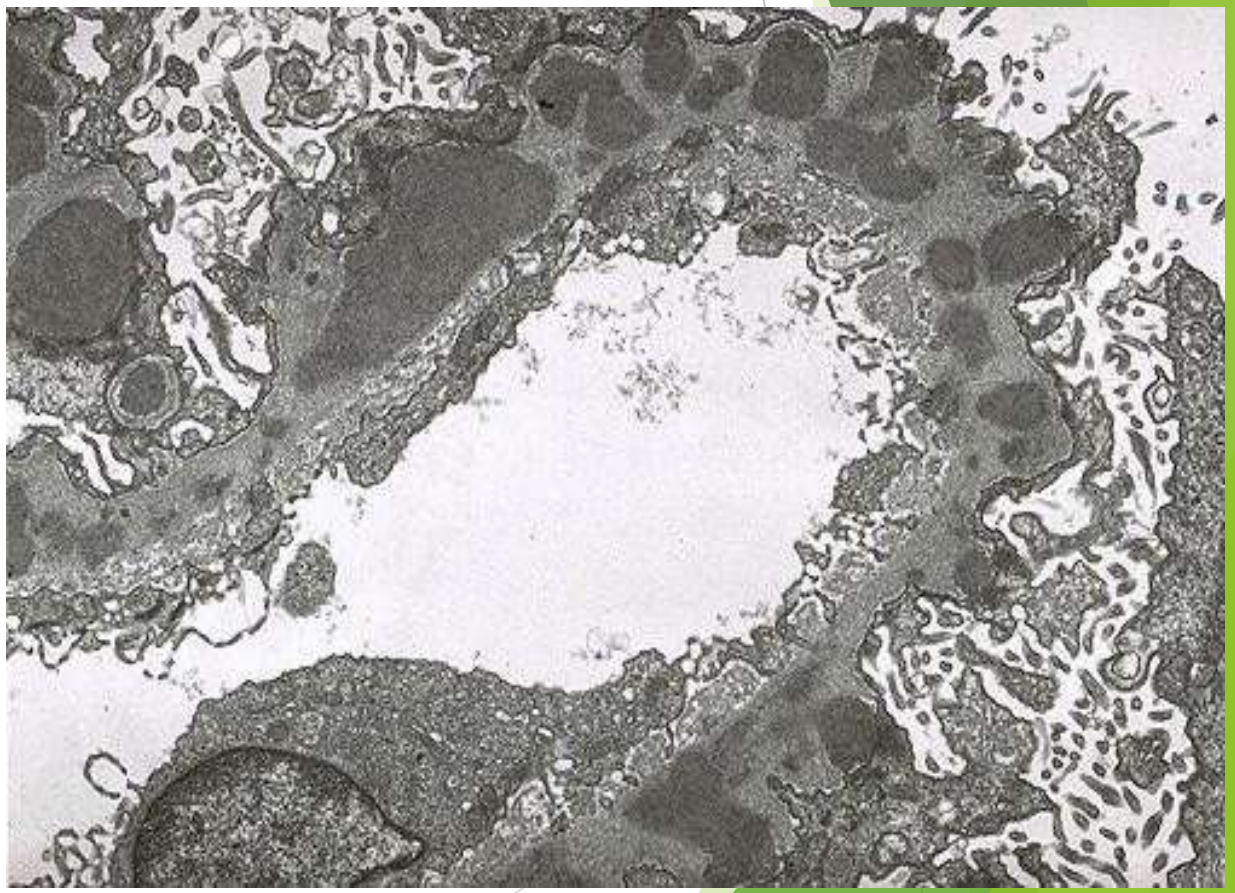
The main histologic feature is **diffuse thickening** of the capillary wall (GBM glomerular basement PAS stain

**PAS stain used for BM

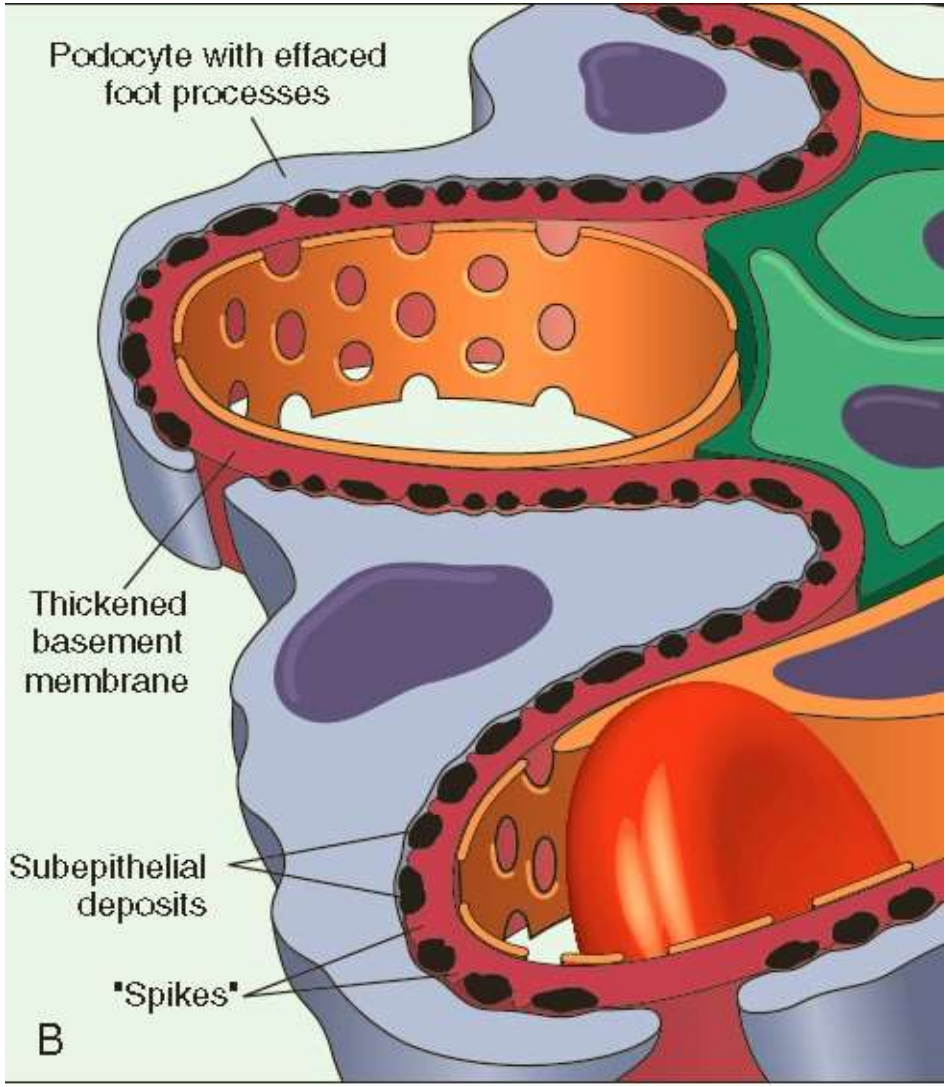


Membranous GN

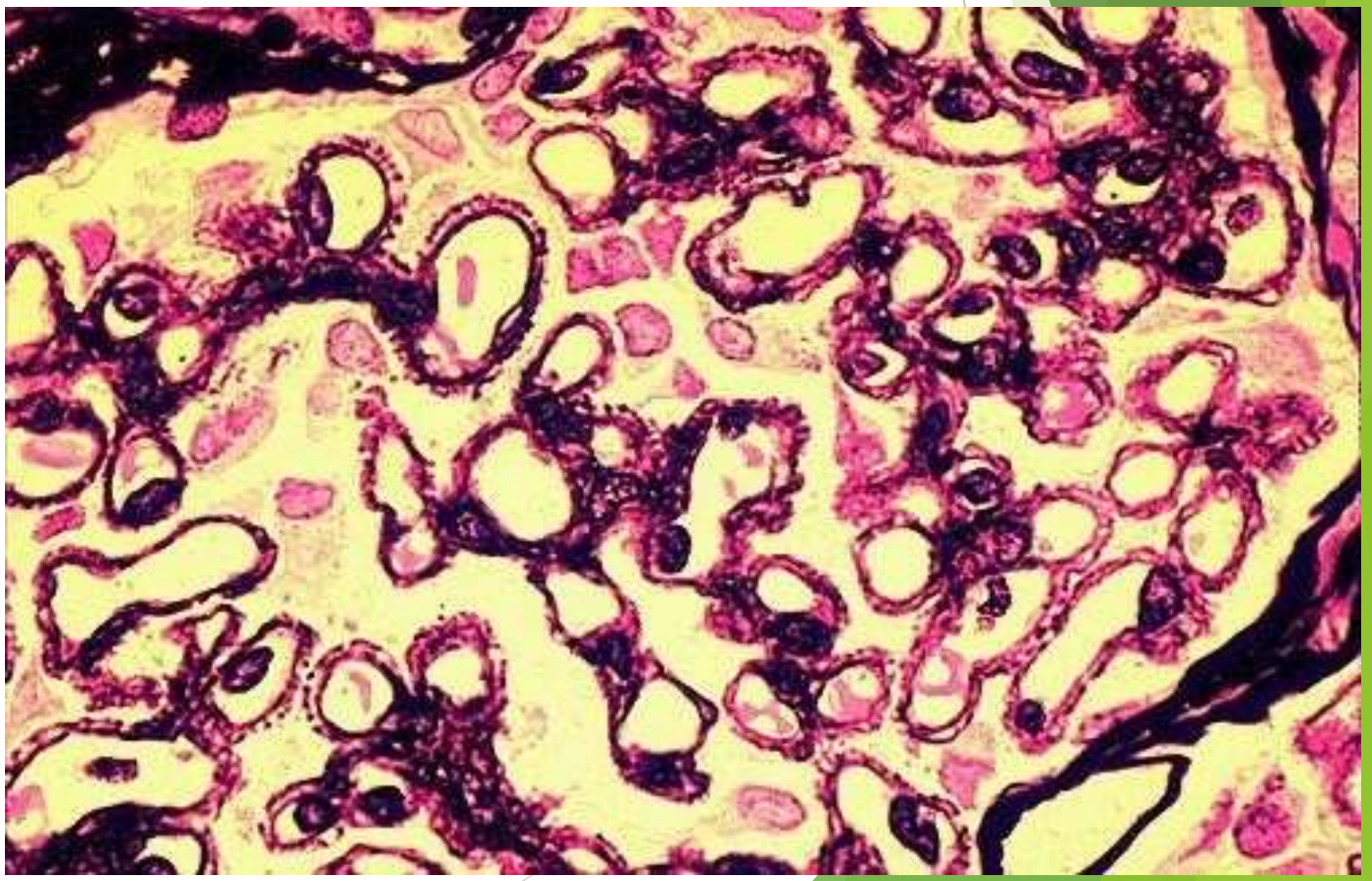
EM reveals that thickening is caused by **subepithelial** deposits, which nestle against the GBM & are separated from each other by small, spike~~-like protr~~usions of GBM matrix that form in reaction to the deposits (**spike & dome pattern**)



Membranous GN



Spikes & dome pattern in silver stain

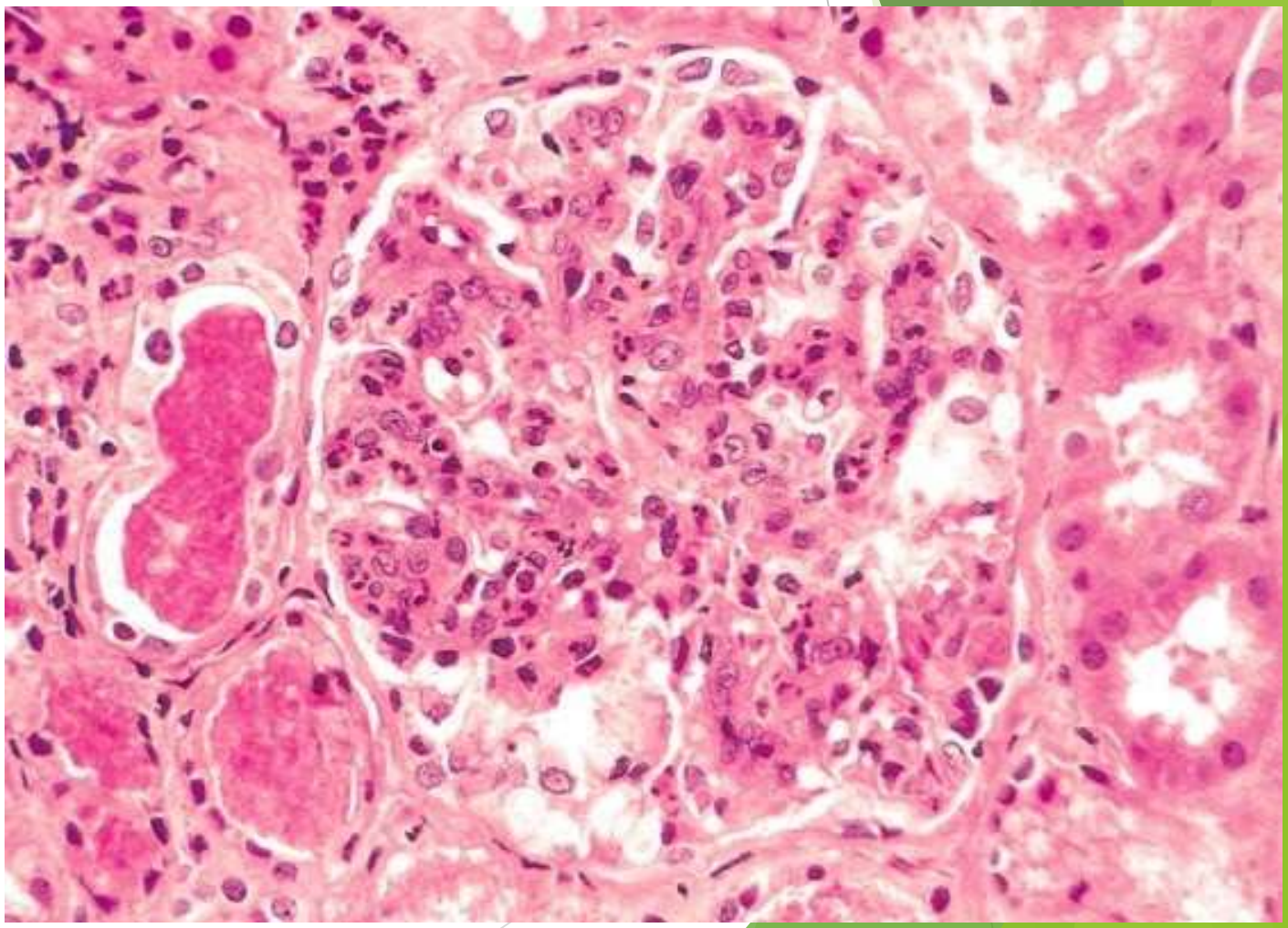


Post infectious GN (proliferative) LM morphology

Most characteristic change increased cellularity of all glomeruli (nearly all glomeruli) caused by

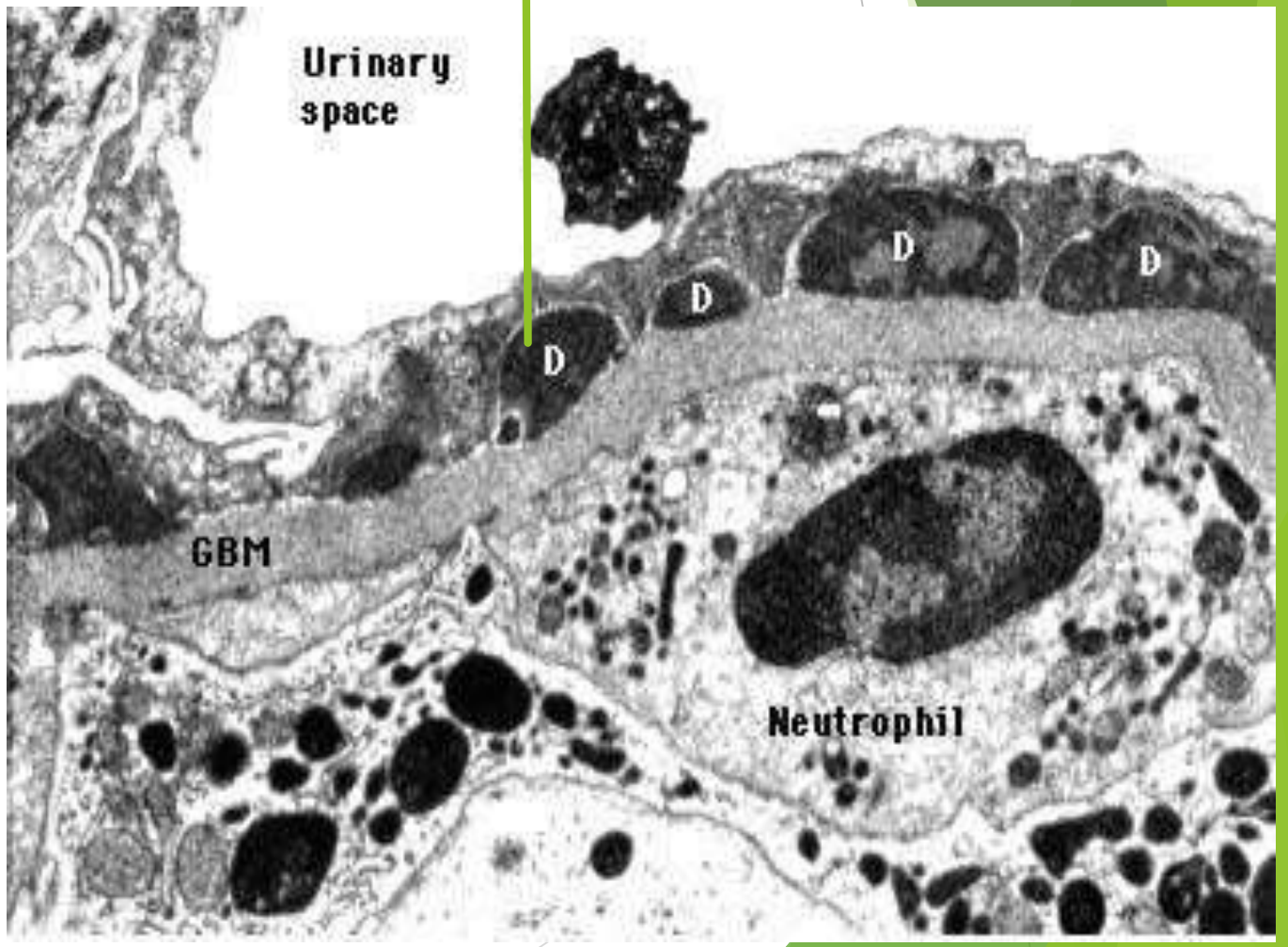
(1) proliferation & swelling of endothelial & mesangial cells

(2)by infiltrating neutrophils & monocytes.



Post infectious GN
EM morphology

EM: shows deposited immune complexes as **subepithelial "humps"** (on the epithelial side of GBM)
IF: scattered granular deposits of IgG & complement within the capillary walls

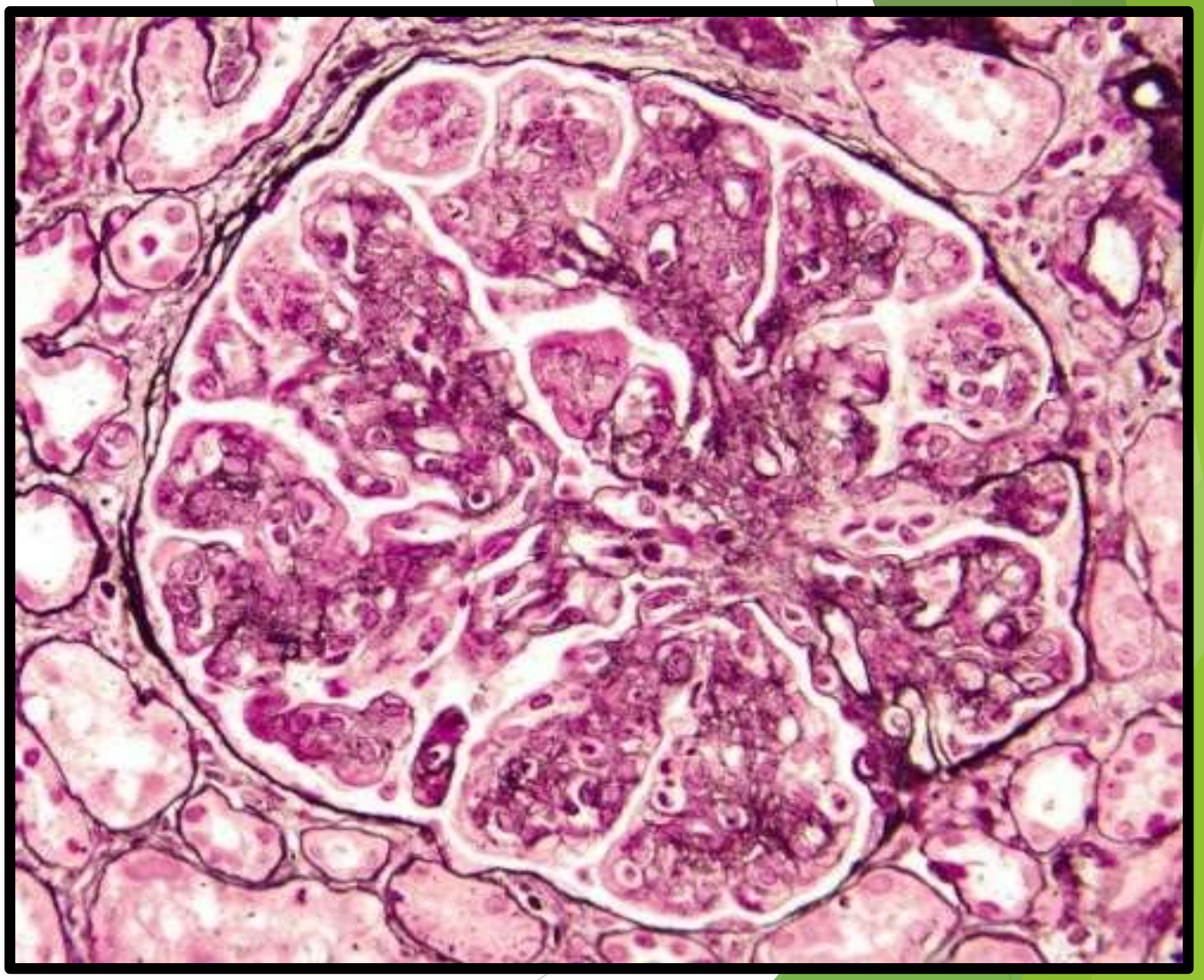


Membranoproliferative (mesangiocapillary) GN

MPGN type 1

Glomeruli are large, have an accentuated lobular appearance; proliferation of mesangial & endothelial cells as well as infiltrating leukocytes

EM and clinical history required to differentiate between post streptococcal GN and membranoproliferative GM

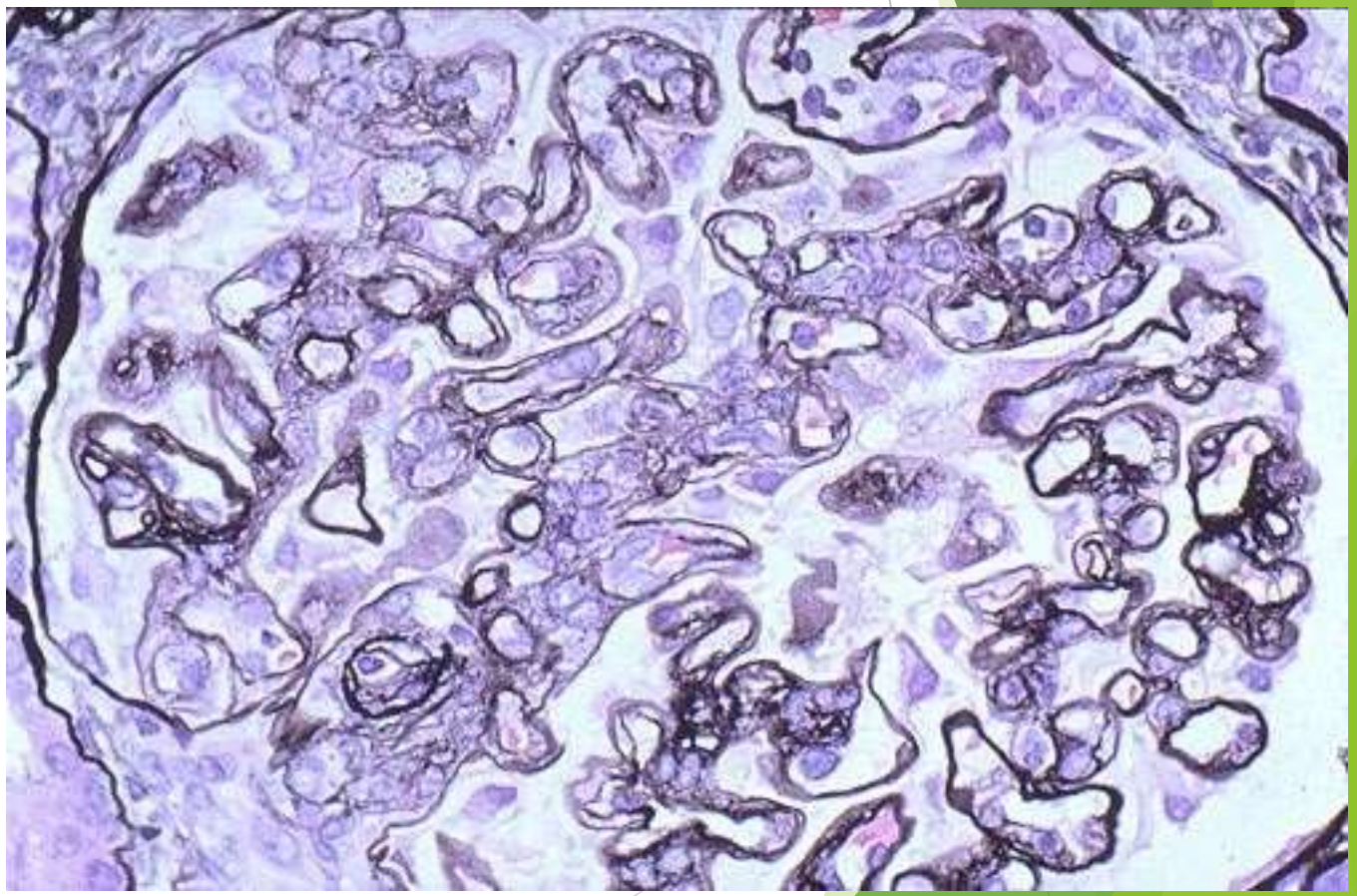


MPGN
LM morphology

The GBM is thickened, and the glomerular capillary wall often shows a **double contour**, or "**tram track**," appearance, especially evident with use of silver

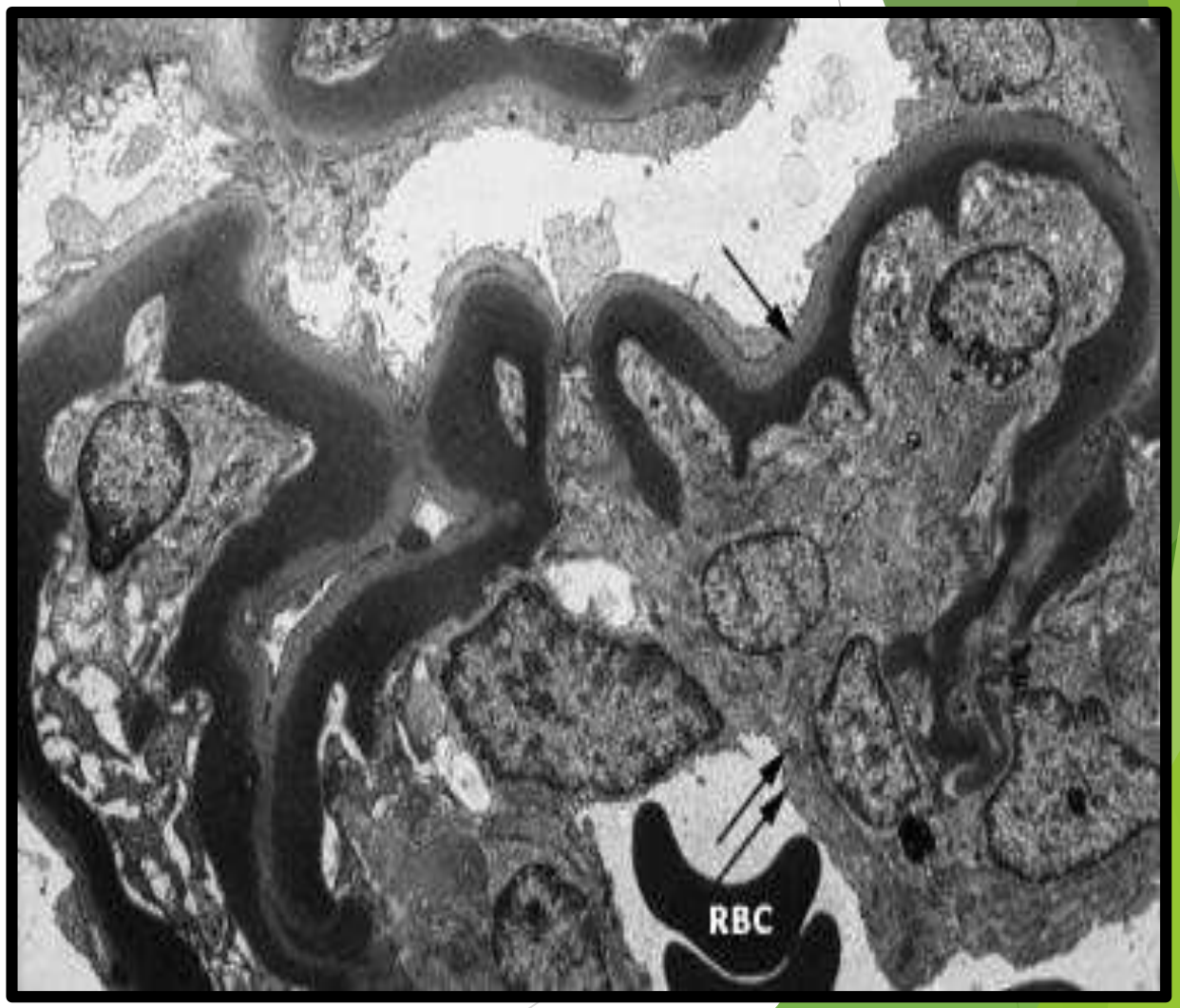
**tram track: splitting of BM due to presence of deposits

Tram track of MPGN in silver stain



MPGN II/ DDD

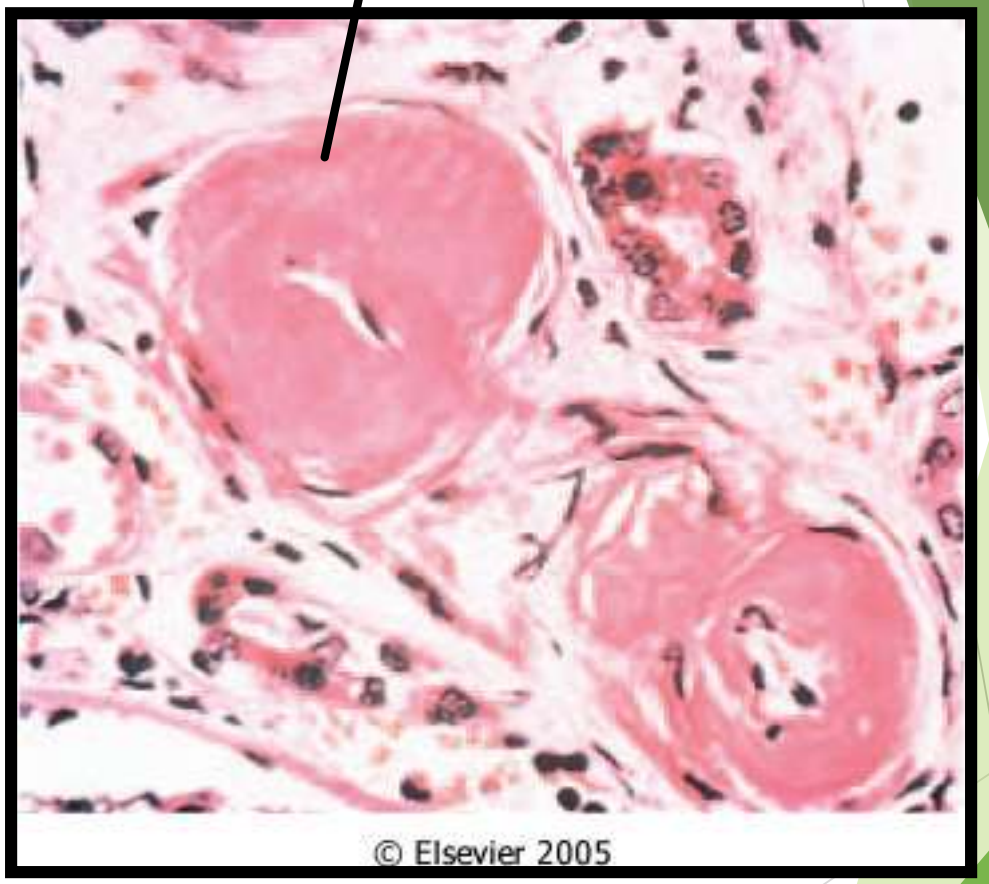
There are **dense** homogeneous deposits within the basement membrane. **Ribbon-like appearance** of subendothelial & intramembranous material



Benign Nephrosclerosis

- Microscopically there is hyaline thickening of the walls of small arteries and arterioles (**hyaline arteriolosclerosis**)
- causing luminal **narrowing** leading to ischemia and atrophy.
- Sclerosis of Glom., tubular atrophy, and interstitial fibrosis in advanced cases

Hyalinized/ thickened capillary wall



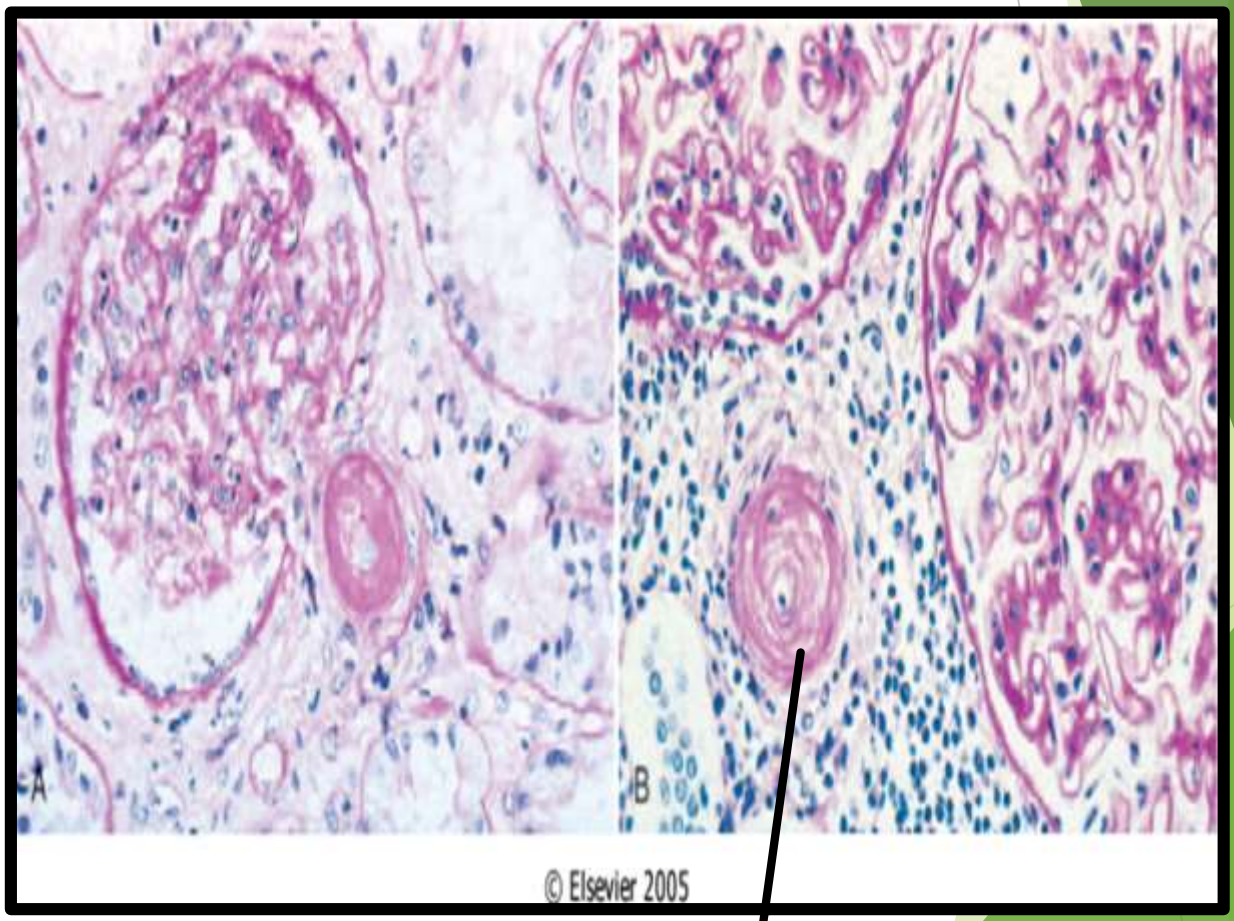
**بهاي الحالة ما بكون في كثير sclerosis

Malignant hypertension and malignant nephrosclerosis

- **MORPHOLOGY**
- Normal size or slightly shrunken.
- Pinpoint cortical petechial hemorrhage (Flea –bitten appearance)
- Fibrinoid necrosis
- Necrotizing arteriolitis
- Hyperplastic arteriolosclerosis (onion skin appearance)
- Necrotizing glomerulitis
- Microthrombi in glomeruli and necrotic arterioles

Onion skin appearance= malignant hypertension

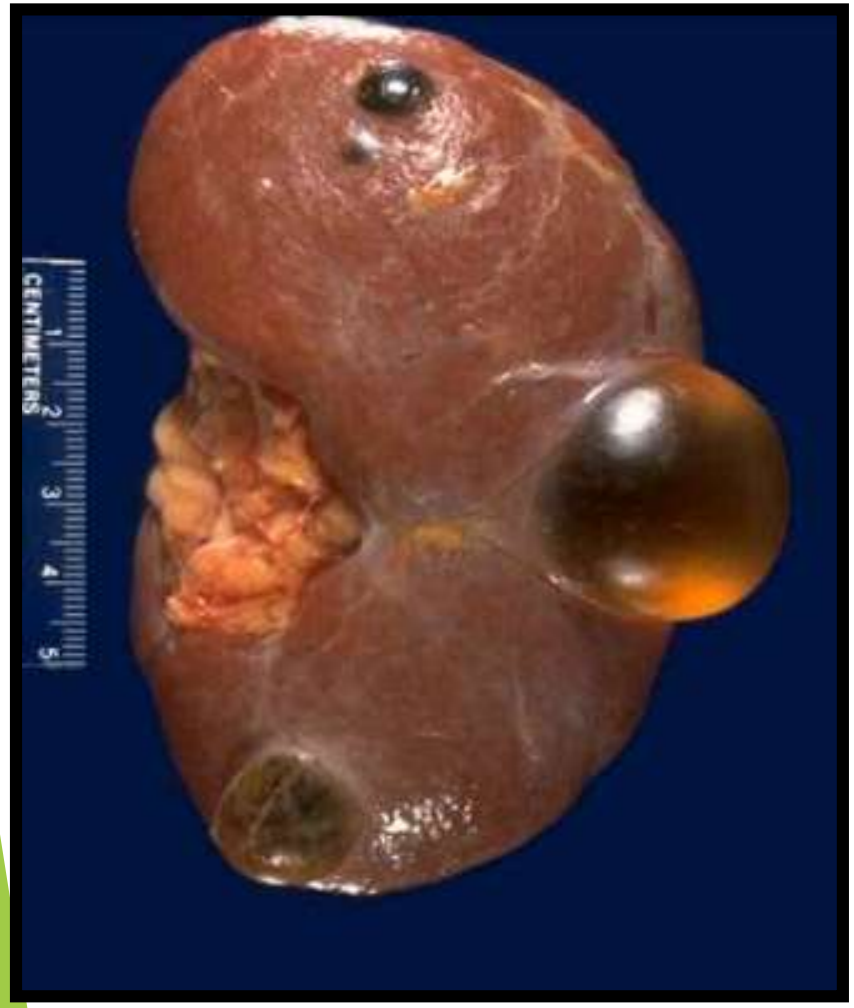
مهم مهم

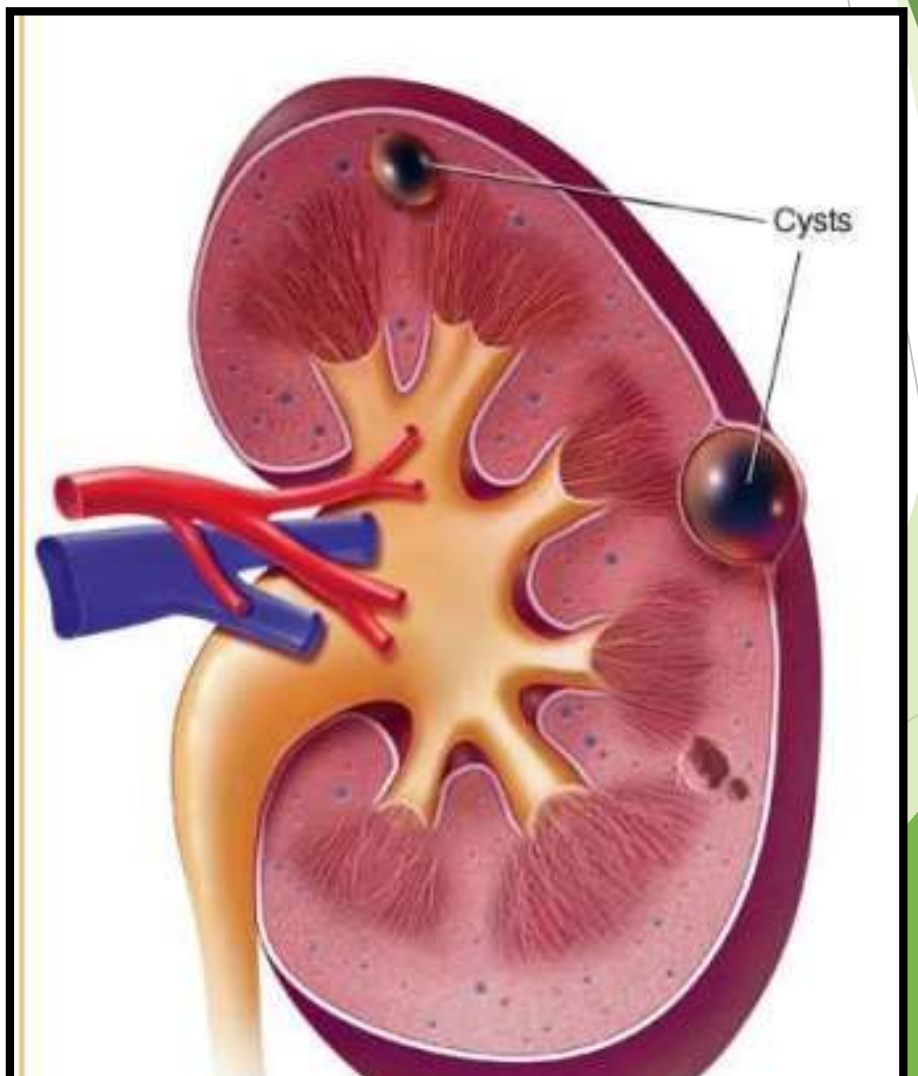


Onion skin appearance

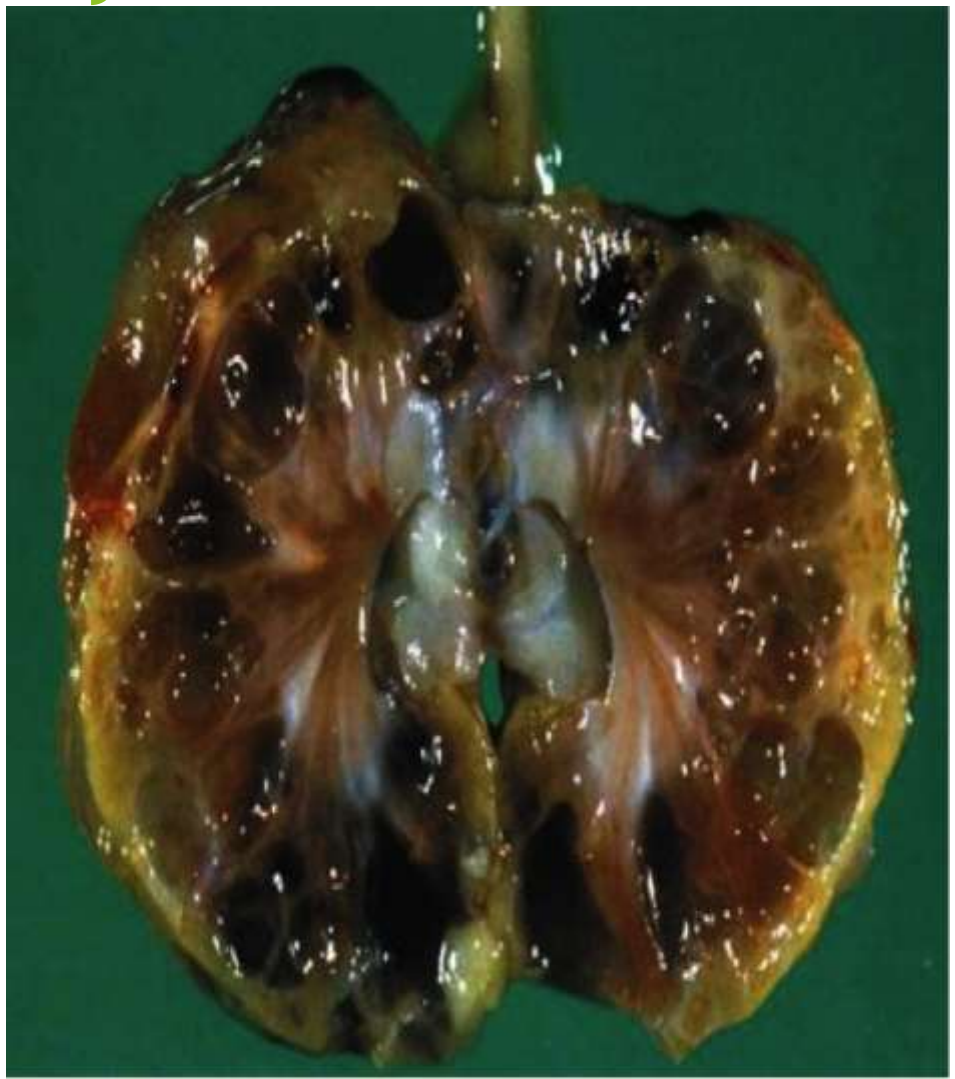
Simple Renal Cysts

solitary, incidental, clinically insignificant.
Importance: to differentiate from renal tumors





Autosomal Dominant (Adult) Polycystic Kidney Disease



Rough outer surface

Normal vs childhood polycystic kidneys

NORMAL TERM INFANT KIDNEYS

CHILDHOOD) POLYCYSTIC KIDNEYS

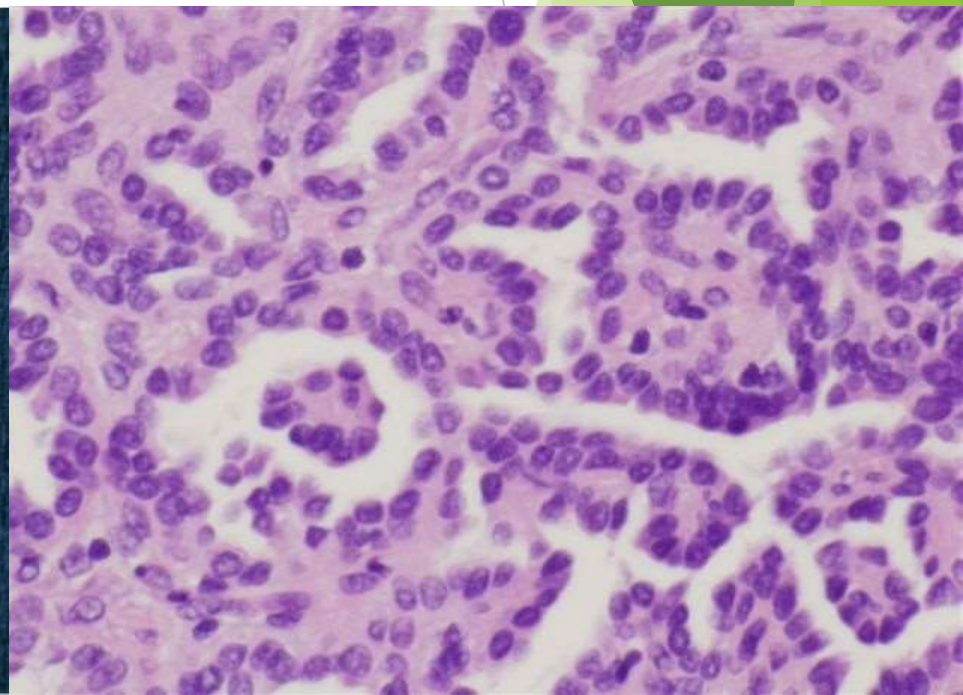
Smooth outer surface

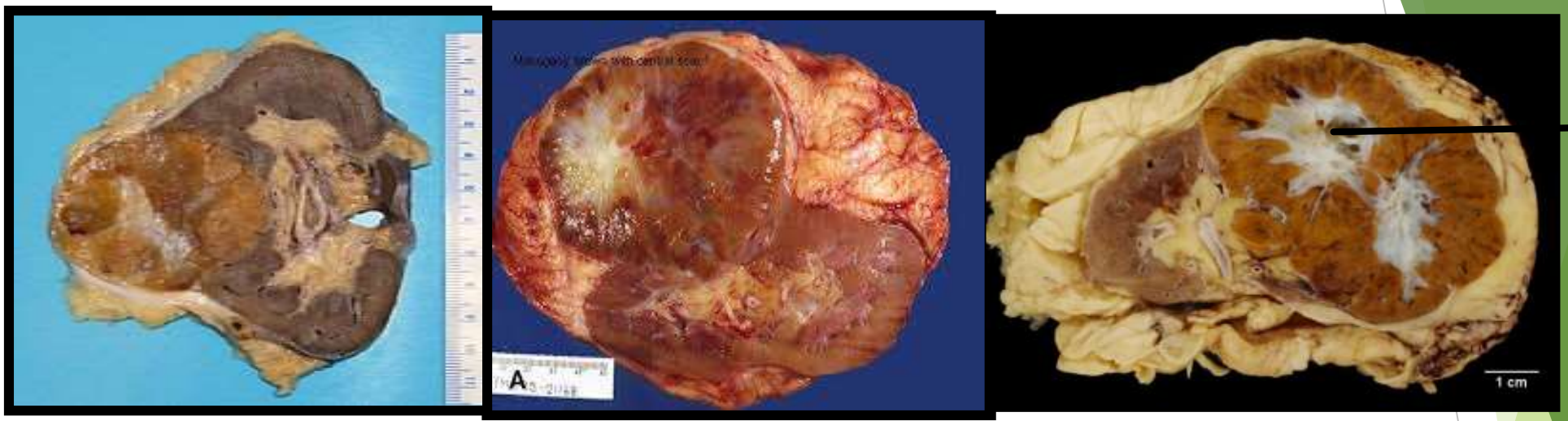
Cysts, No parenchyma inside

Benign tumors

❖Small cortical papillary adenomas:

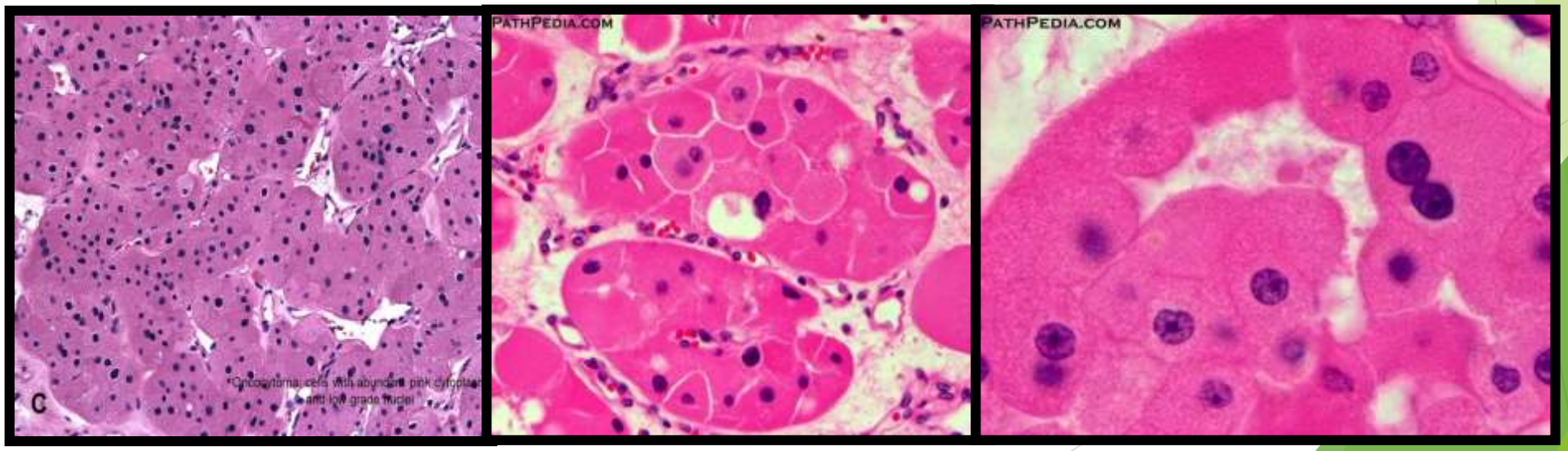
- ❖Well cirucumscibed mass, less than 0.5 cm.
- ❖Very common incidental findings.
- ❖Have no clinical significance.
- ❖Histology: Dense papillae or tubules composed of small cuboidal cells.(innocent cells)





Oncocytoma (pure oncocytes proliferation)

oncocytes: large cells with abundant eosinophilic cytoplasm due to presence of abundant mitochondria



Wilms Tumor: Nephroblastoma

Morphology

Gross:

Large, solitary, well-circumscribed tan to gray mass.
Occasionally:Foci of Hg, cystic degeneration, necrosis.

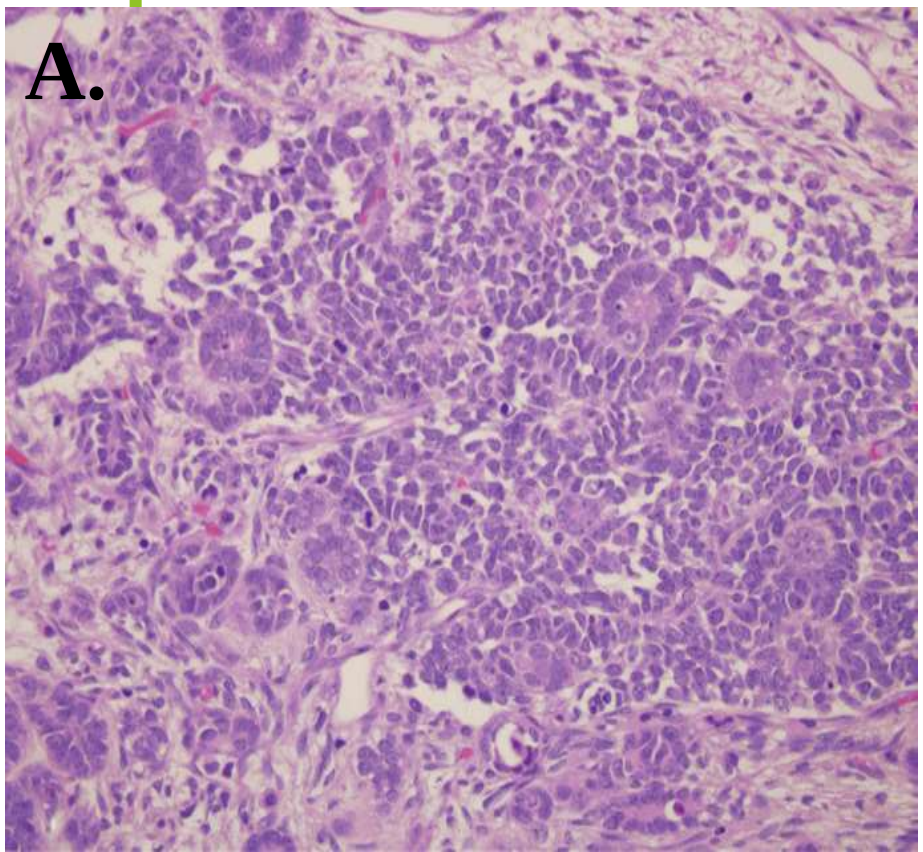
Wilms Tumor: Nephroblastoma

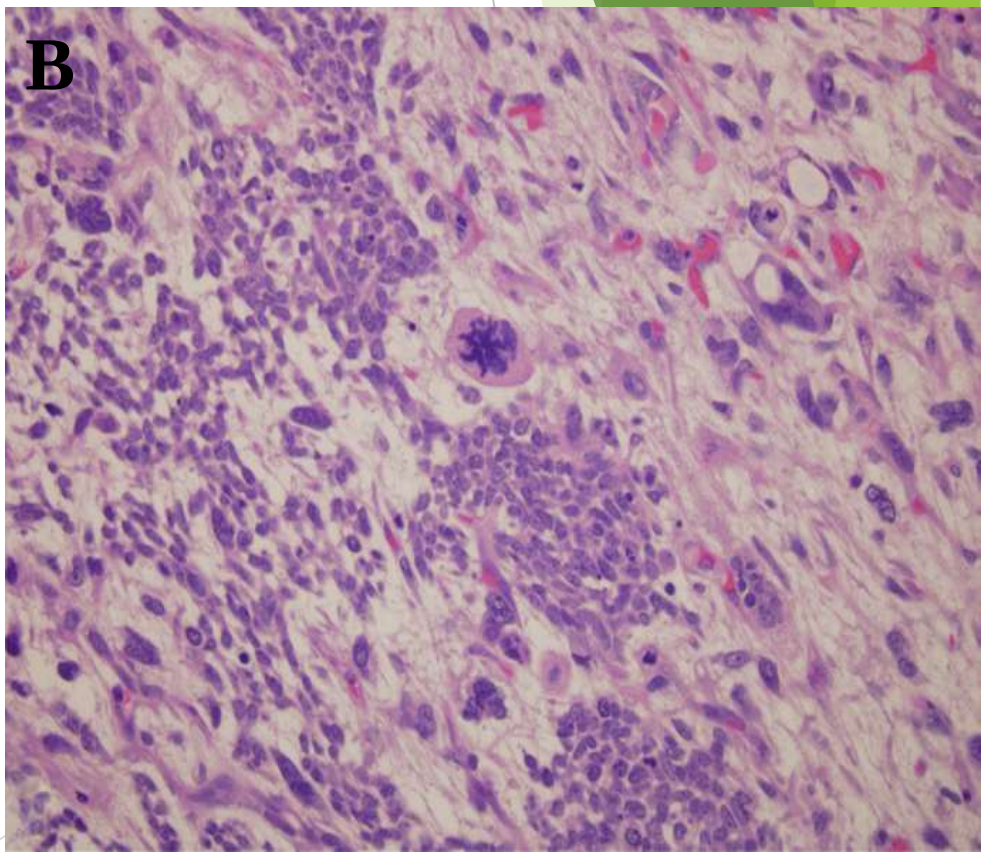
Wilms tumor:

A. Tightly packed blue cells = **Blastemal** component.
   Primitive tubules = **Epithelial** component.

B. Focal anaplasia: Cells with hyperchromatic, pleomorphic nuclei & abnormal mitoses.

Triphasic combination:
Epithelial component
Blastemal component
Stromal component





Thank you

Good luck