

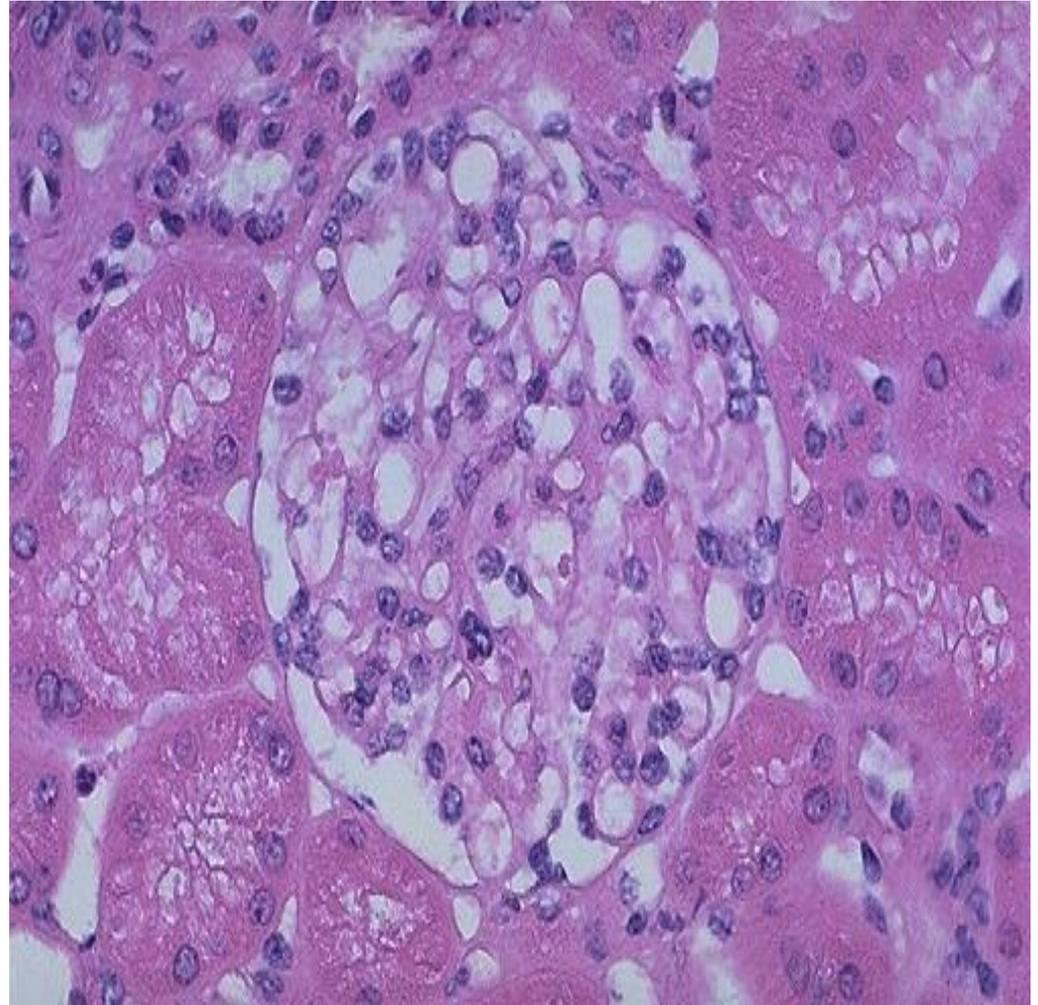
# **UROGENITAL SYSTEM**

## **LAB-1 NOTE**

**DONE BY : DANA ALRAFIAH**

**CASE:** 10 years old boy with generalized edema in the face, hands and legs as well as puffy eyes.

- BP is normal.
- Urinalysis : significant for some proteinuria.
- Most likely diagnosis? MCD



# Minimal change disease

- Prevalence in children?

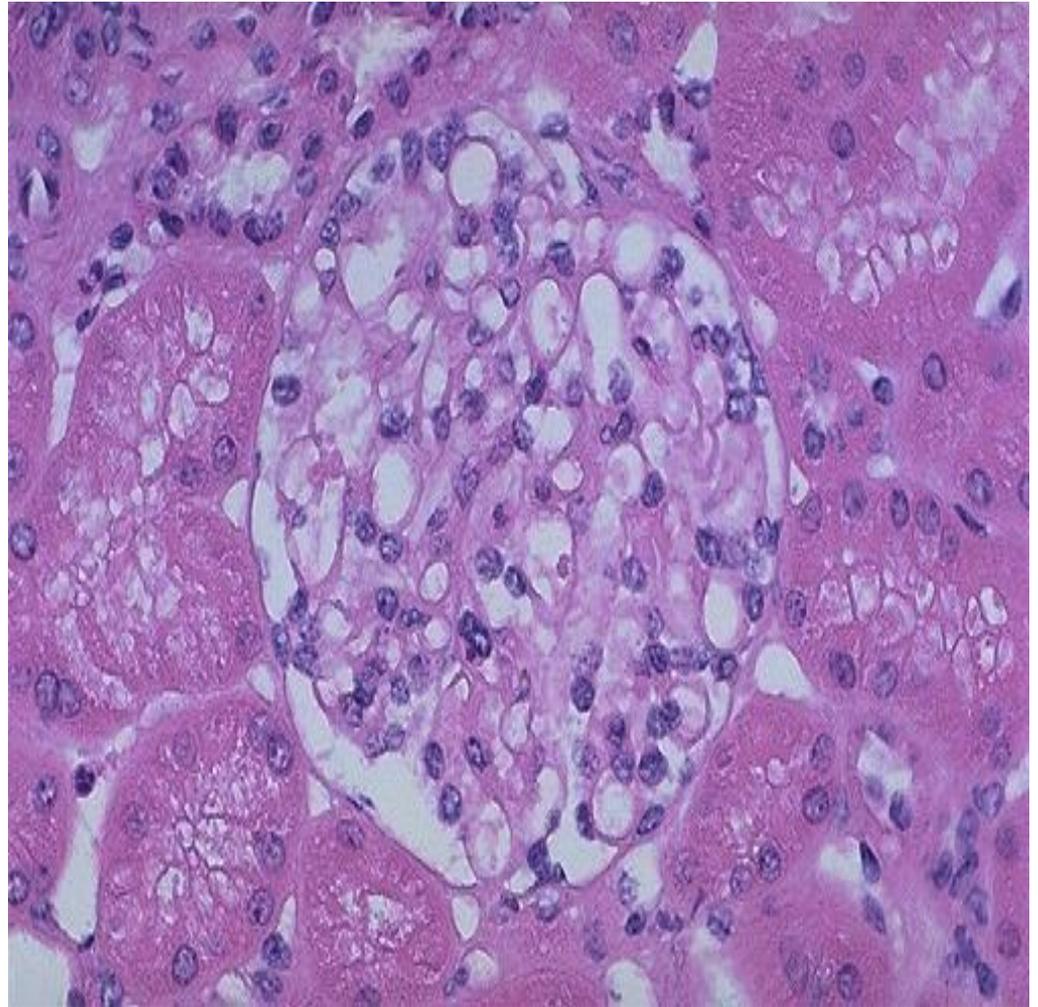
**Most common cause of Nephrotic Syndrome and proteinuria in children.**

- LM findings? **none, glomeruli are normal and unremarkable**

- IF findings? **None, no evidence of immune complex deposition is this process.**

- EM findings?

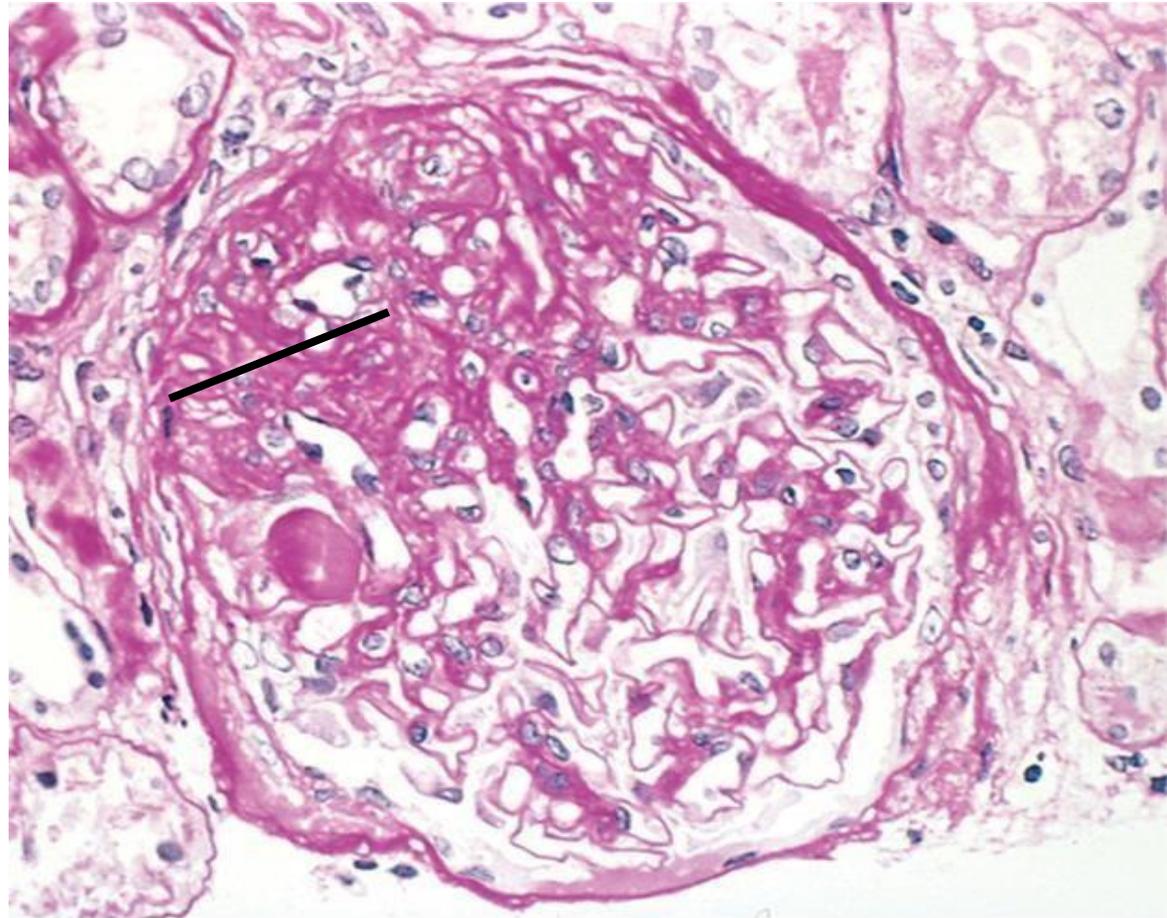
**Significant; Effaced podocyte foot processes**



**CASE:** kidney biopsy of a 25 years old female. Findings: high BP, proteinuria and some degree of hematuria.

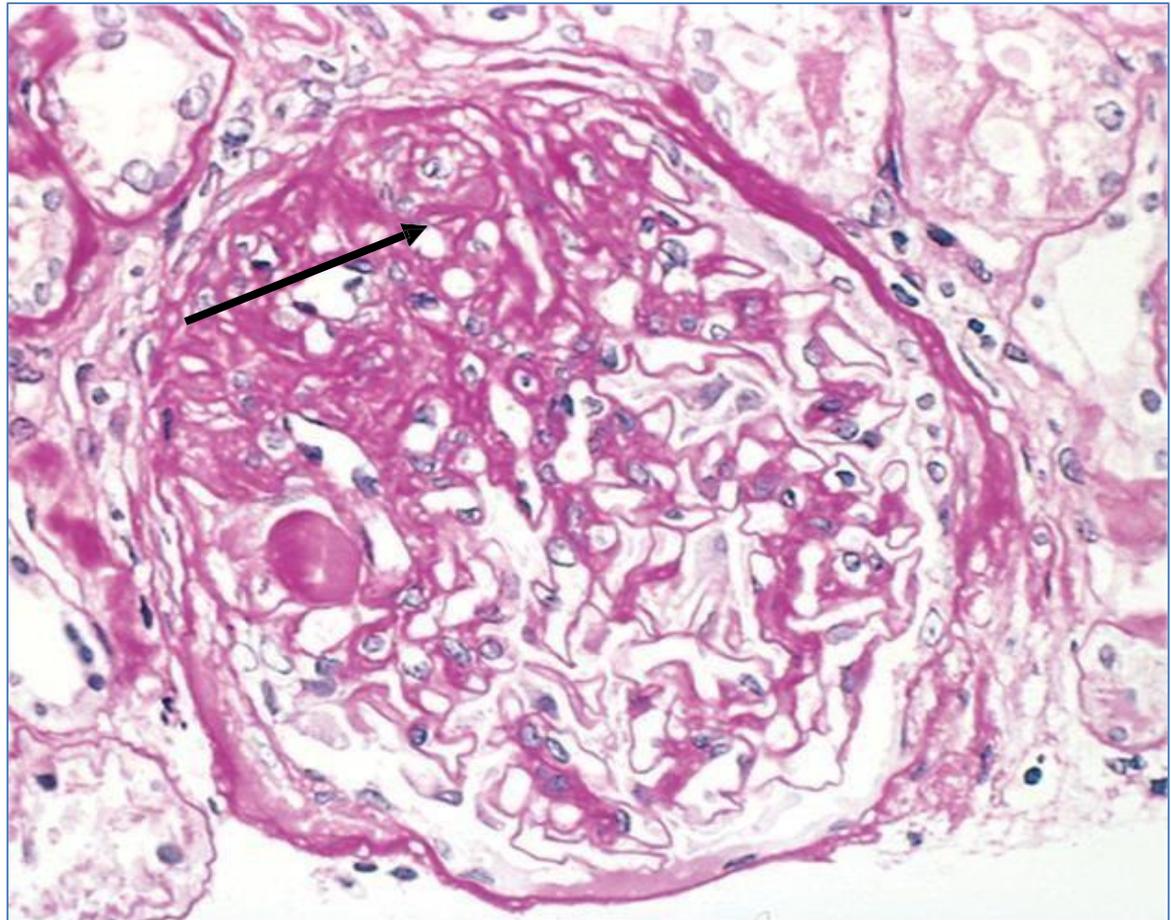
- **Describe area with arrow:** abnormal fibrous tissue with segmental deposition (only in a part of the glomerulus), further investigation showed that some but not all glomeruli are affected (focal involvement).

- **Most likely diagnosis?**  
FSGS



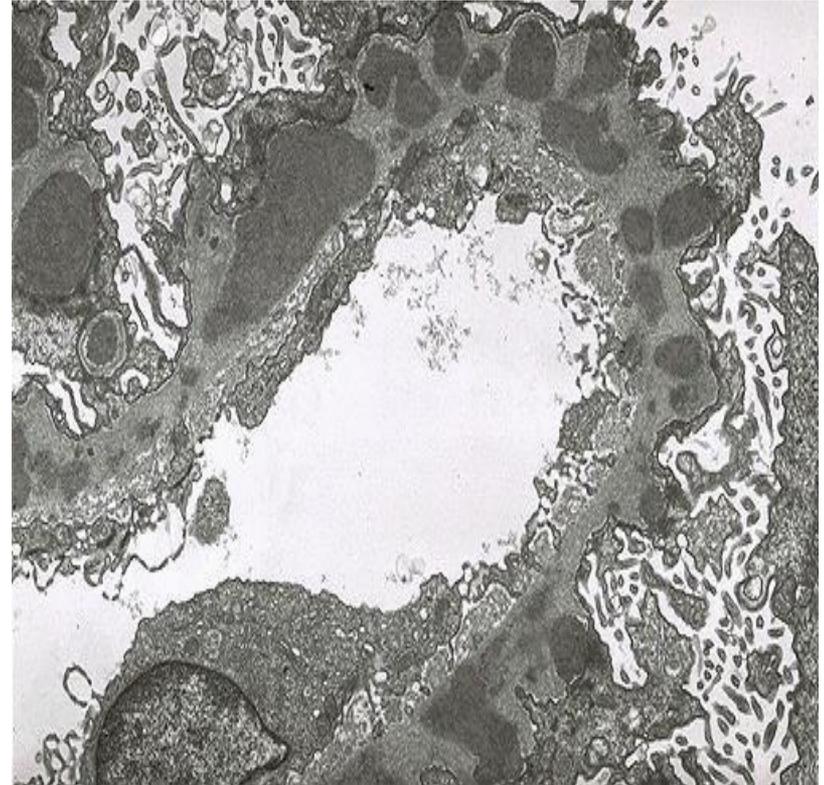
# Focal and segmental glomerulosclerosis (FSGS)

- **Prevalence in adults?**  
**Most common cause of Nephritic Syndrome in adults.**
- **LM findings? Diagnostic; Segmental sclerosis affecting some of the glomeruli (focal involvement).**
- **IF findings? Negative, sometimes nonspecific staining of IgM and C3 is found**



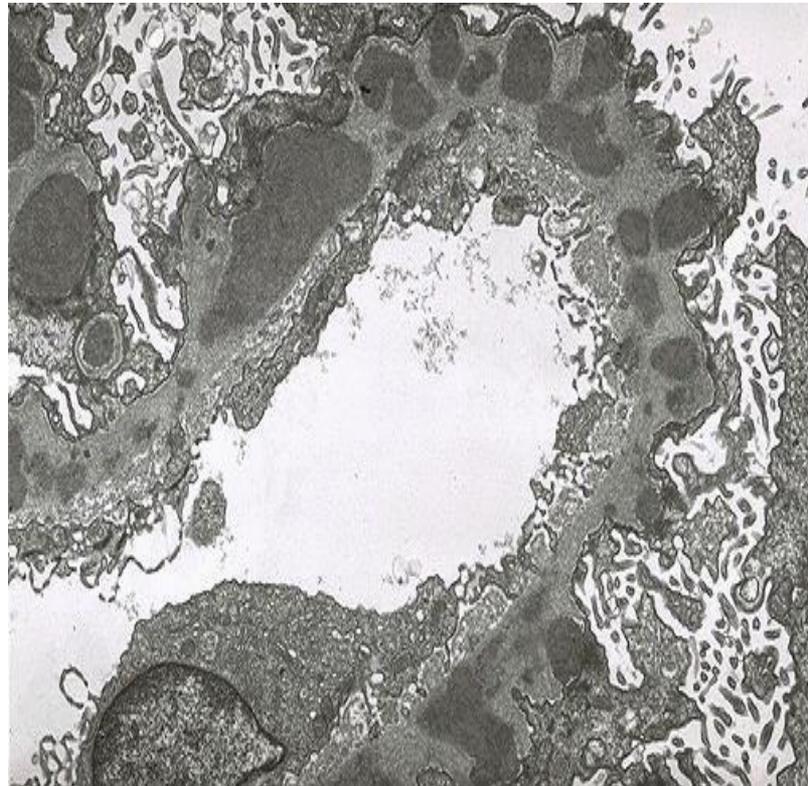
**CASE:** EM image of a kidney biopsy of a 50 years old man with significant proteinuria and a history of colon cancer.

- Image shows segment of peripheral capillary loop (part of endothelial cells, basement membrane and overlaying podocytes).
- Appearance is very characteristic; subepithelial depositions in a “**spikes and dooms**” pattern. The spikes are BM material and the dooms (darker color) are immune complex deposited in the GBM.
- **Most likely diagnosis?** Membranous glomerulopathy.



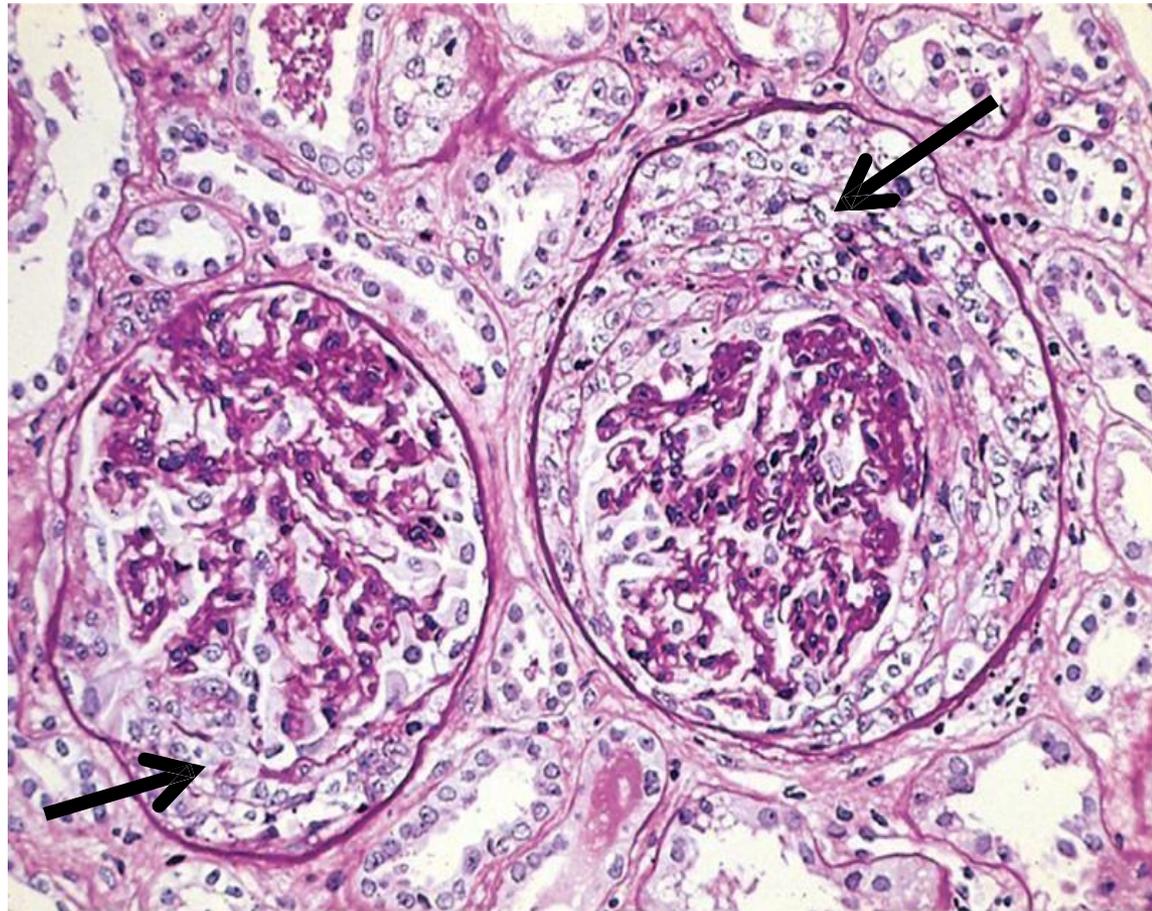
# Membranous glomerulopathy

- Types? **1ry and 2ry**
- Causes of 2ry?
  - Drugs.**
  - **heavy metals.**
  - Infections like malaria.**
  - Malignancy like colon and lung cancer.**



# Rapidly Progressive (Crescentic) Glomerulonephritis

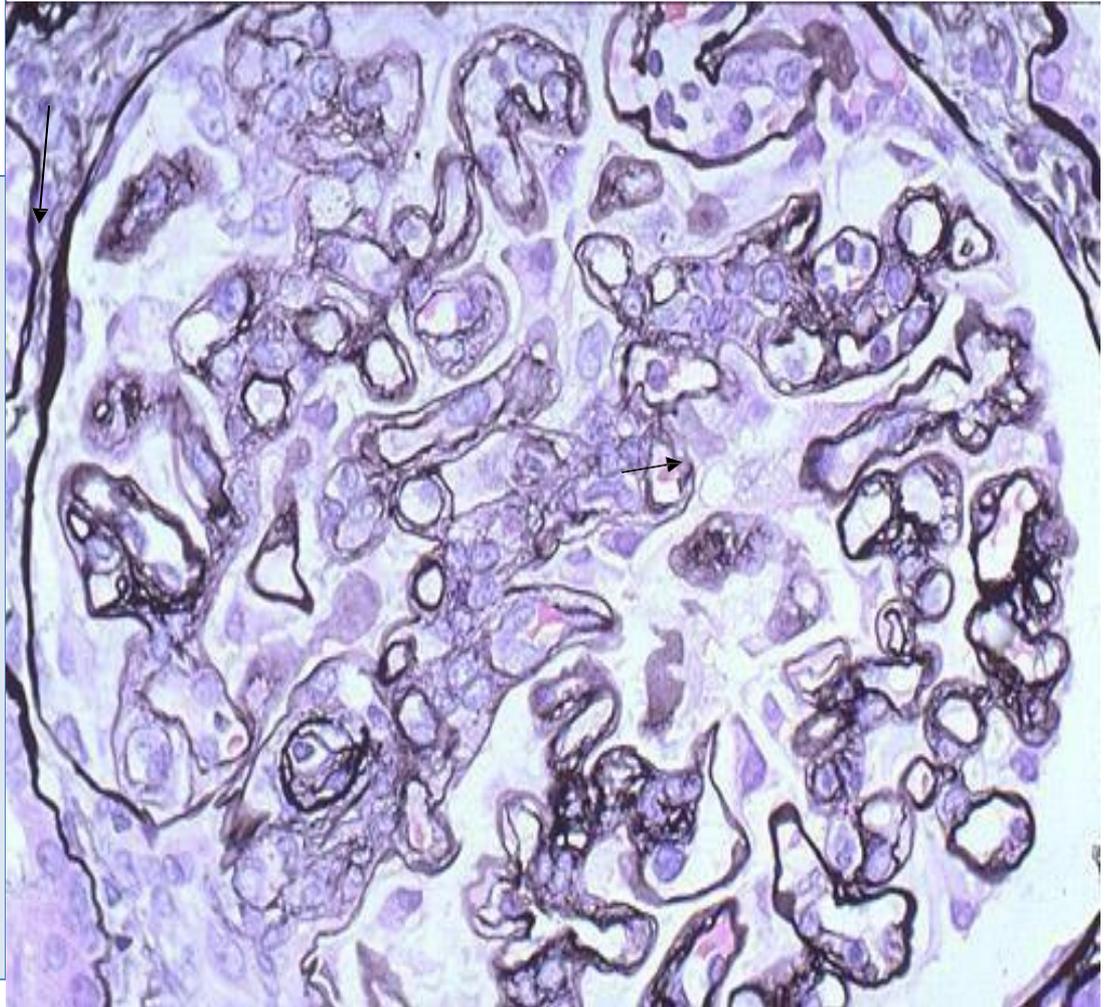
- Name of pointed structure: cellular **crests** inside glomerulus.
- If this condition diffusely involves kidney of the patient then it's called Crescentic Glomerulonephritis or Rapidly Progressive Glomerulonephritis.



# MPGN

What type of special stain is this?

**Silver stain; it highlights changes in GBM; GBM appears black and as two lines “double contour” or in the “tram truck” appearance, which is characteristic of the membranoproliferative disease.**



# hydronephrosis

**Describe the kidney:**

**Kidney is open, calyces and renal pelvis appear significantly dilated.**

• **Causes ? Congenital and acquired**

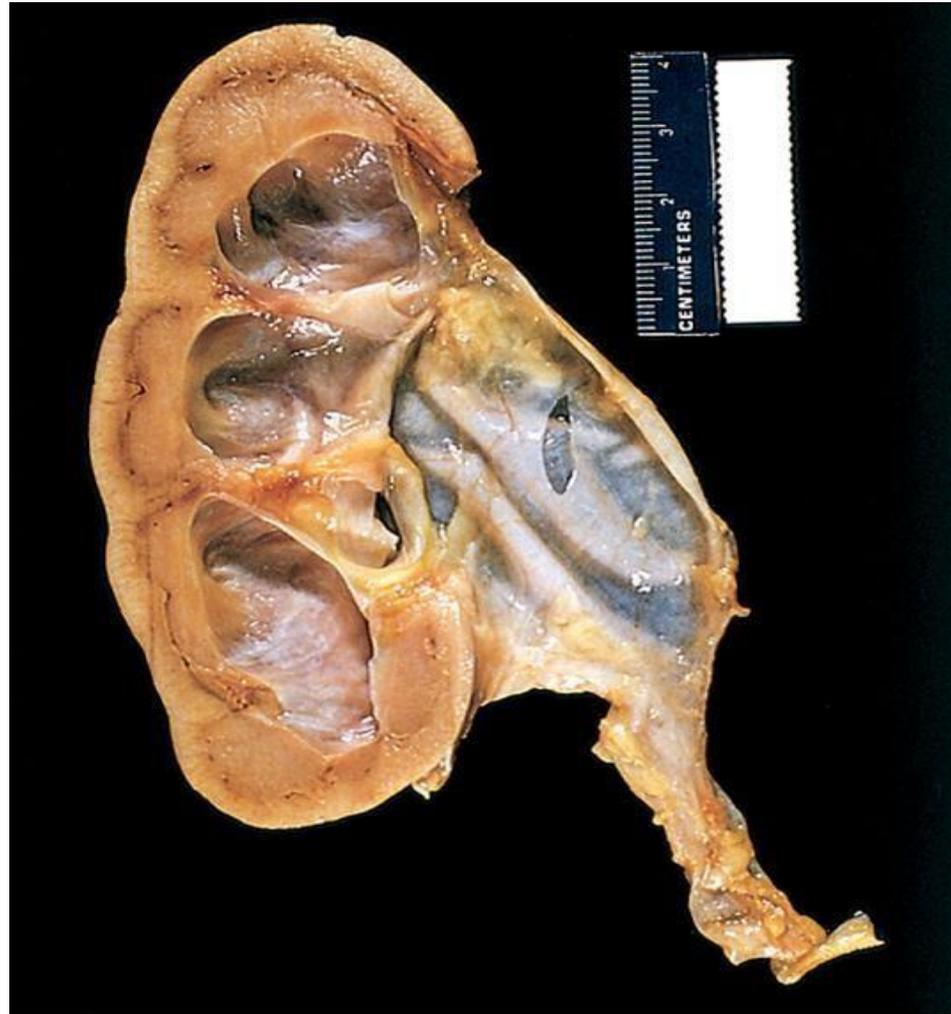
• **Consequences?**

**(especially if bilateral)**

**Chronic renal**

**failure if not treated**

**early.**

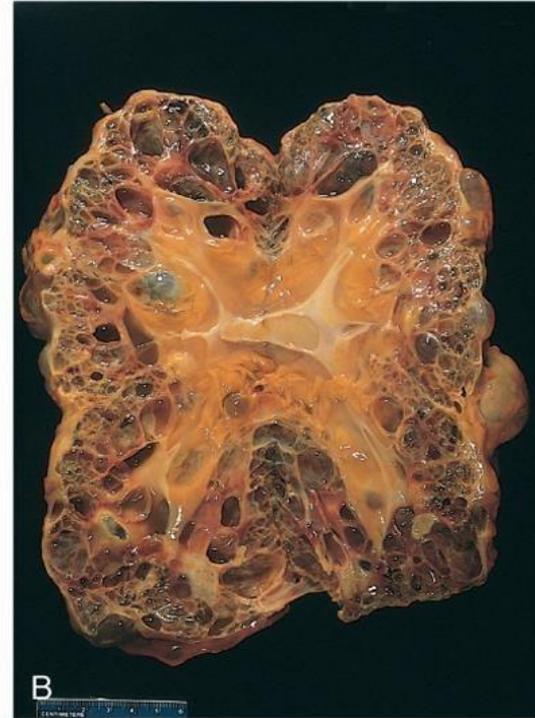


# Simple renal cysts

- **CASE:** 36 year old patient complaining of very **mild aching flank pain.**
- **Findings:** small scattered cortical cysts
- **What is the clinical significance?** No clinical significance aside from very mild symptoms. Usually discovered incidentally.



- **Kidney is hugely enlarged and distended with numerous cysts of variable diameters in the cortex and the medulla.**
- **By the time the kidney reaches this size, the cortex (functional part of the kidney) is almost lost.**
- **Diagnosis? Polycystic adult kidney disease “PKD”.**
- **Genetic abnormalities? PKD1 &2, AD inheritance.**
- **what is the clinical significance?**  
**Progression to renal failure, hypertension and other findings.**

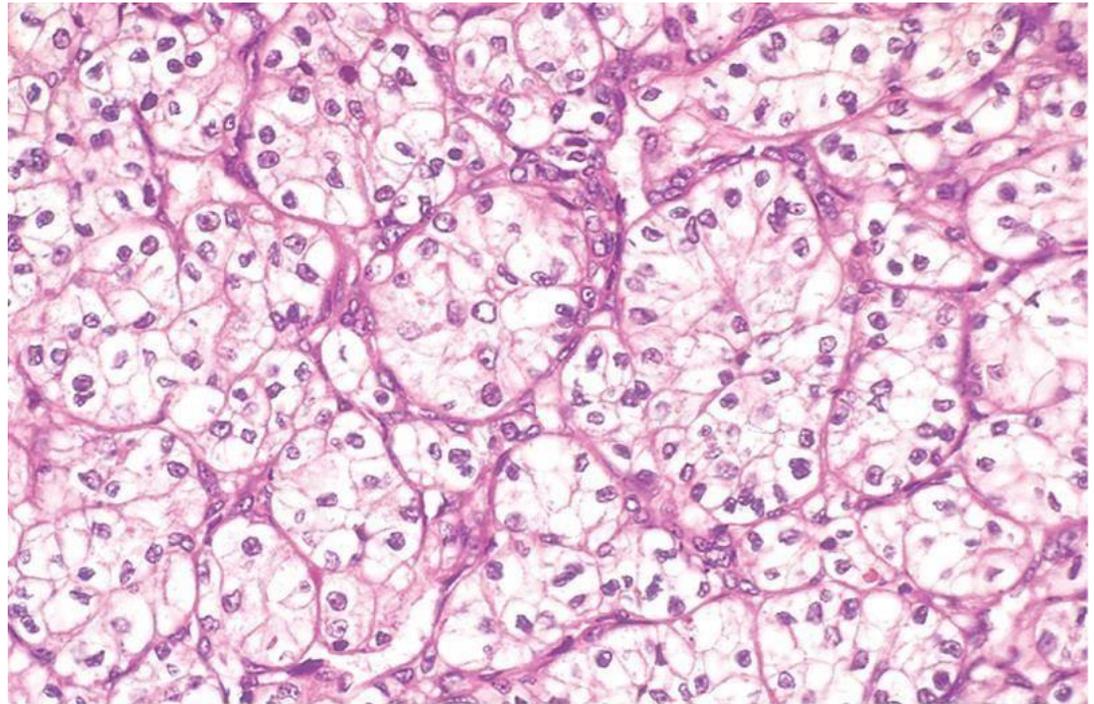


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- Resected renal mass from a 65 years old male.

- **Morphology**: mass is visible on LM, cells have “clear morphology” and are arranged in circles of cells or small “nests”.

-**Diagnosis? Clear Cell Carcinoma**, most important and most common renal carcinoma.



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•**Name a genetic predisposing factor for it?**

**VHL gene mutation.**

•**CASE:** tumor resected from a 3 years old boy, presented with huge enlargement of his right kidney.

•**Morphology:** tumor cells are very similar to each other

“monotonous”: scant cytoplasm with a large dark/blue nucleus (similar to other primitive cells).

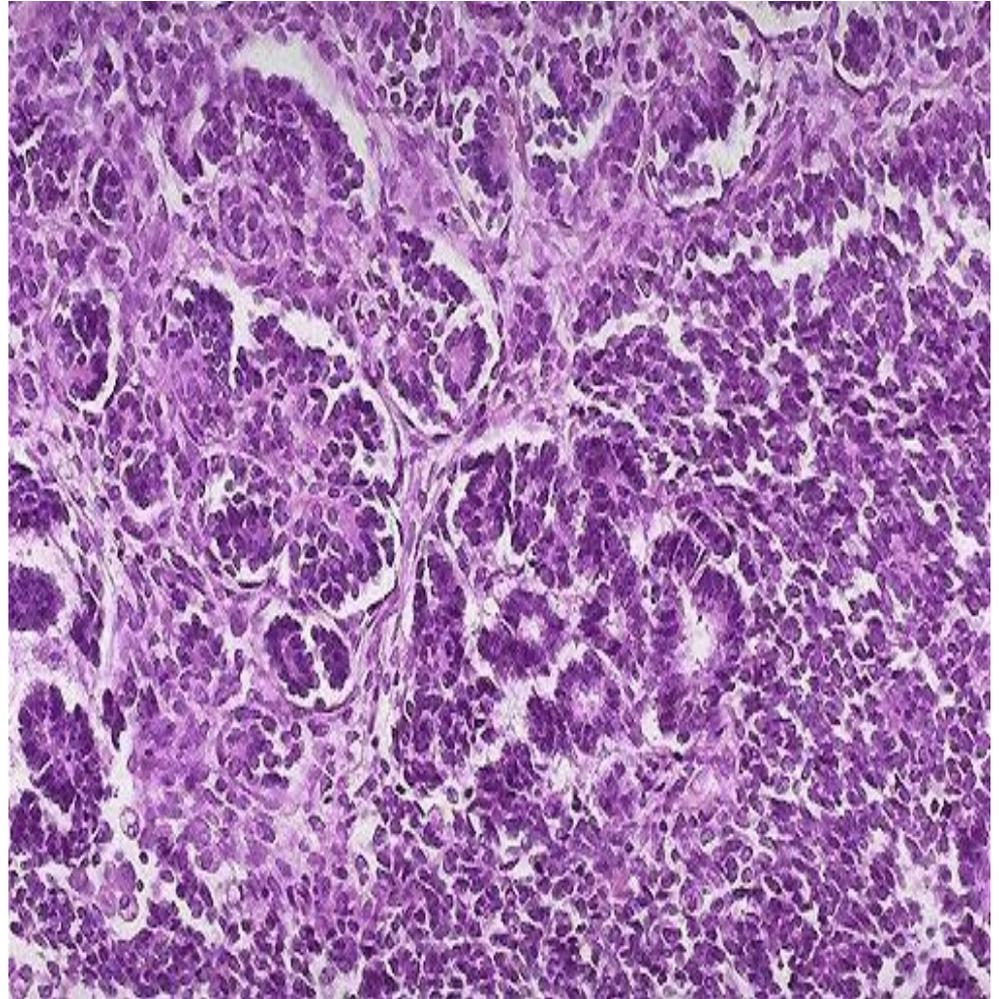
•**Diagnosis?** **Wilms Tumor.**

•**Genetic mutations?**

**WT-1 &2**

•**Age group of patients?**

**Children (childhood tumor).**



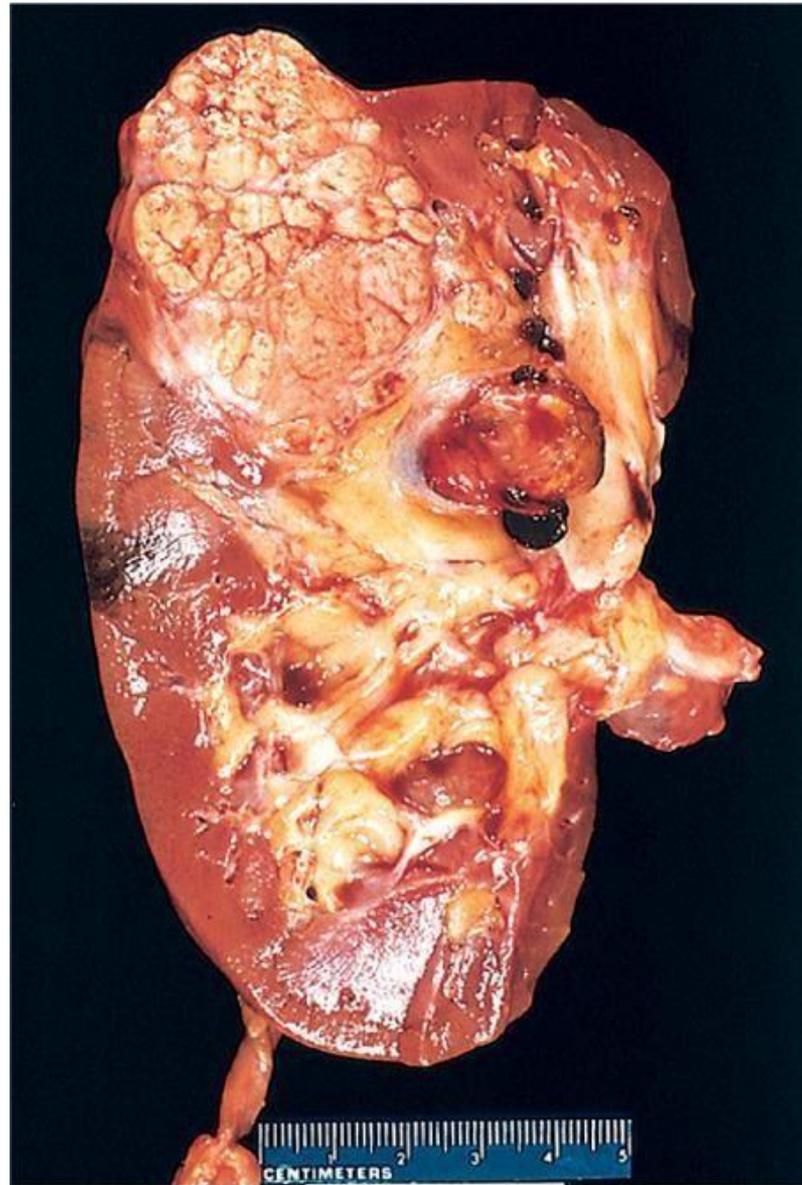
# RCC

- One significant clinical aspect of renal cell tumors (of whatever type) is their ability to invade and grow inside veins like the renal vein.

- Morphology ? **Renal tumor that appears yellowish and spherical in shape on the upper pole of the kidney.**

- Name a paraneoplastic syndrome associated with this tumor?

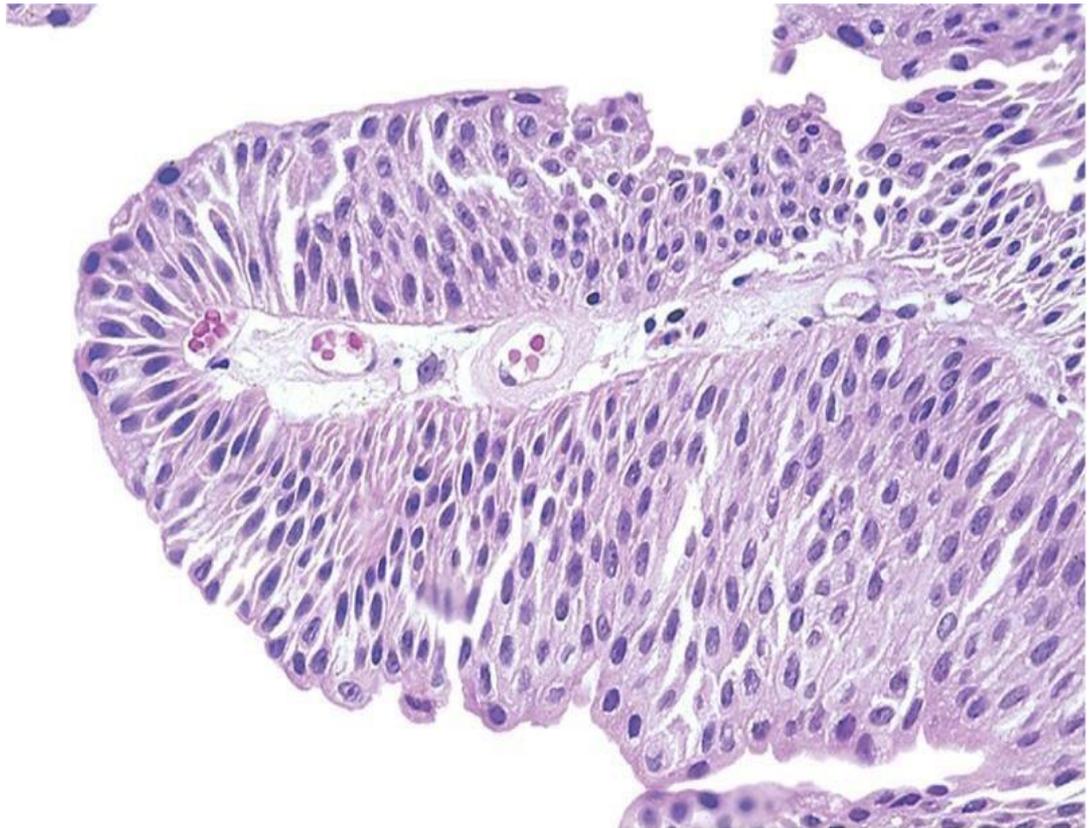
**Polycythemia; due to the cancer's ability to produce erythropoietin.**



**CASE:** Papillary growth (fingerlike structure) that was resected from the urinary bladder of a 45 years old male patient, with no significant previous medical Hx, expect that he is a heavy smoker.

**Diagnosis?**

**Urothelial  
papillary  
carcinoma –  
low grade**



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- Low grade because cells appear well differentiated.
- Risk factors include: smoking and exposure to certain industrial chemical substances.