RENAL TUMORS OF ADULTS

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URINARY TRACT TUMORS

- ***Tumors of the lower urinary tract are twice as common as kidney tumors.***

- **The most common malignant tumor of the kidney is renal cell carcinoma.**
- **The most common lower urinary tract tumor is urothelial carcinoma.**

RENAL CELL CARCINOMA (RCC)

- Origin: renal tubular epithelium.
- in cortex.
- 2%-3% of all cancers in adults.
- 6^{th}-7^{th} decades.
- M:F 2:1

PREDISPOSING FACTORS

- smoking
- hypertension
- obesity
- occupational exposure to cadmium (nickel-cadmium batteries, etc).
- chronic dialysis (acquired polycystic disease)

NEW CLASSIFICATION BASED ON THE MOLECULAR ORIGINS OF THESE TUMORS

- 1-Clear Cell Carcinomas
- 2-Papillary Renal Cell Carcinomas
- 3-Chromophobe Renal Carcinomas

1- CLEAR CELL CARCINOMAS

- most common type (70%- 80% of RCC).
- cells with clear or granular cytoplasm.
- may be:

1-Sporadic

2-Familial (including von Hippel-Lindau (VHL) disease)

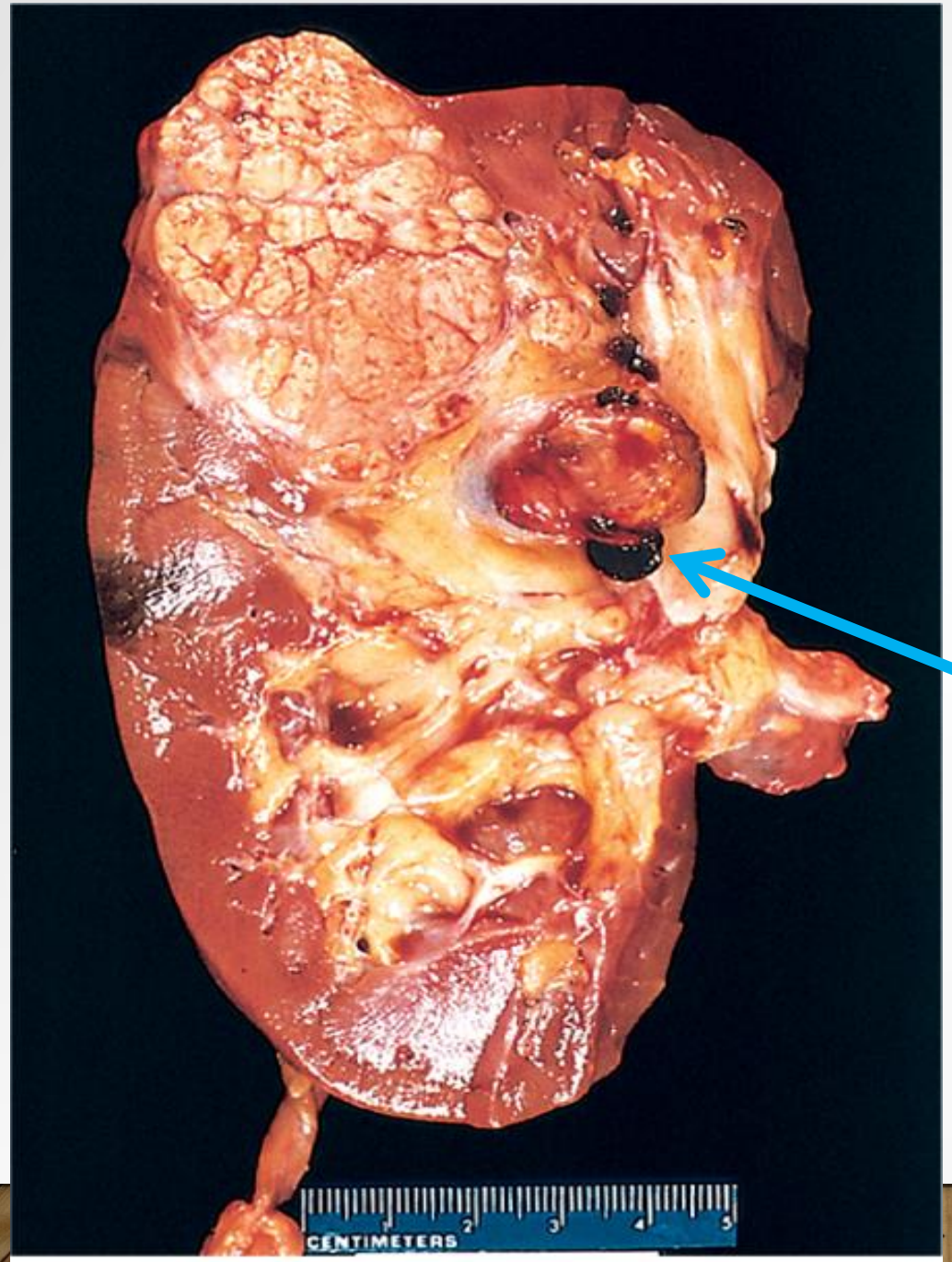
- The *VHL* gene is involved in familial and also sporadic clear cell carcinomas (60%).

2- *PAPILLARY RENAL CELL CARCINOMAS*

- 10% to 15%.
- papillary growth pattern.
- multifocal and bilateral
- familial and sporadic forms.
- *MET* proto-oncogene on chromosome 7 →↑ growth in proximal tubular epithelial cells

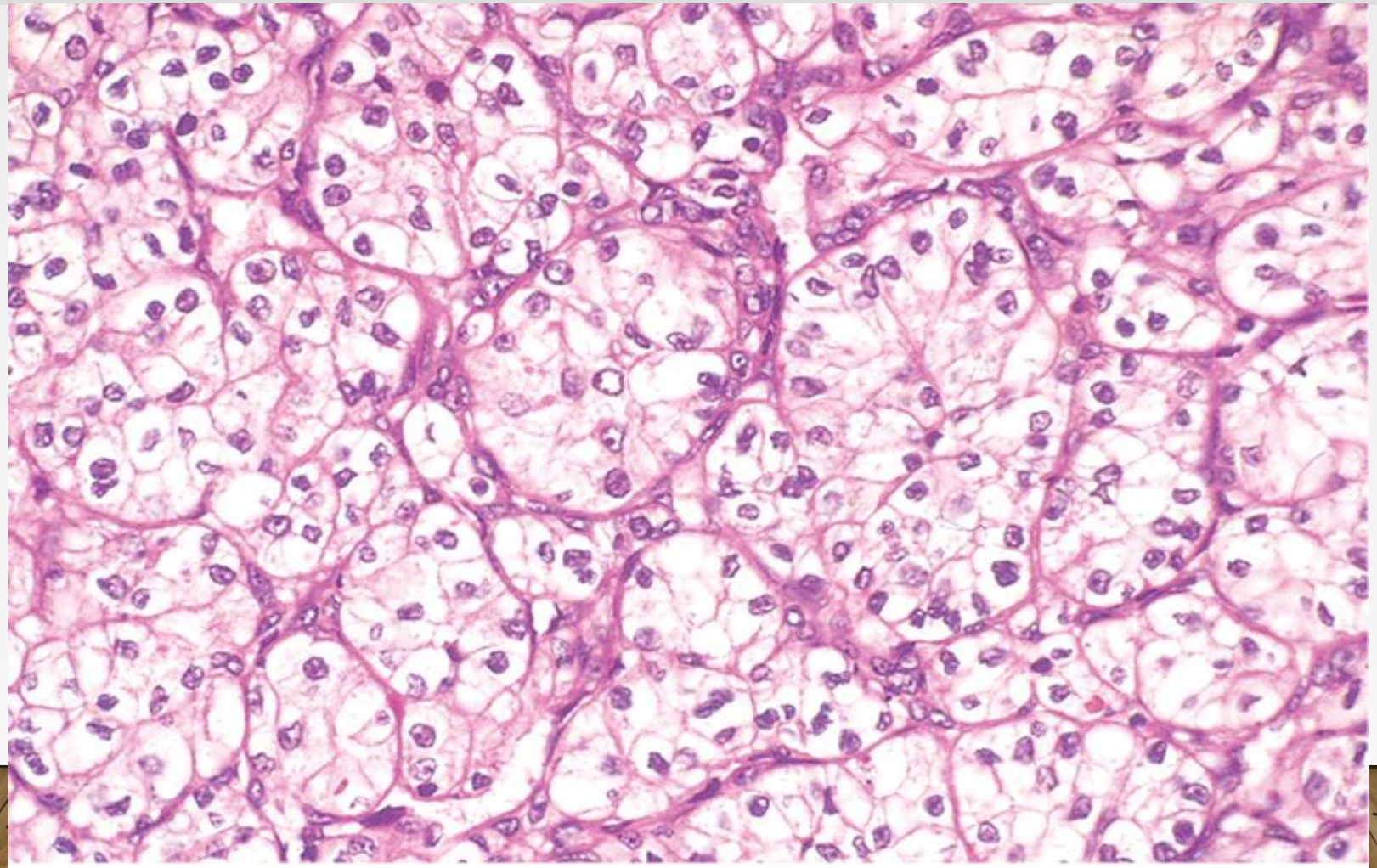
3- CHROMOPHOBE RENAL CARCINOMAS

- least common (5%)
- from intercalated cells of collecting ducts.
- tumor cells are "less clear" than cells in clear RCC
- multiple losses of entire chromosomes, including 1, 2, 6, 10, 13, 17, and 21.
- extreme hypodiploidy.
- good prognosis.



<u>Renal cell carcinoma</u>: yellowish, spherical neoplasm in one pole of kidney.
Note the tumor in the dilated, thrombosed renal vein.

RENAL CELL CARCINOMA (CLEAR CELL TYPE)



CLINICAL COURSE OF ALL RCC

1- Painless hematuria (50%)

2- palpable abdominal mass

3- dull flank pain

4-Fever

5-Polycythemia (5% - 10%): elaboration of **erythropoietin** by tumor.

CLINICAL COURSE OF ALL RCC

6- other Paraneoplastic syndromes:

- 1-hypercalcemia
- 2-Hypertension
- 3-Cushing syndrome
- 4-feminization or masculinization

7- Metastasis: most commonly to lungs and bones.

8- may invade the renal vein

UROTHELIAL TUMORS (TRANSITIONAL CELL CARCINOMA)

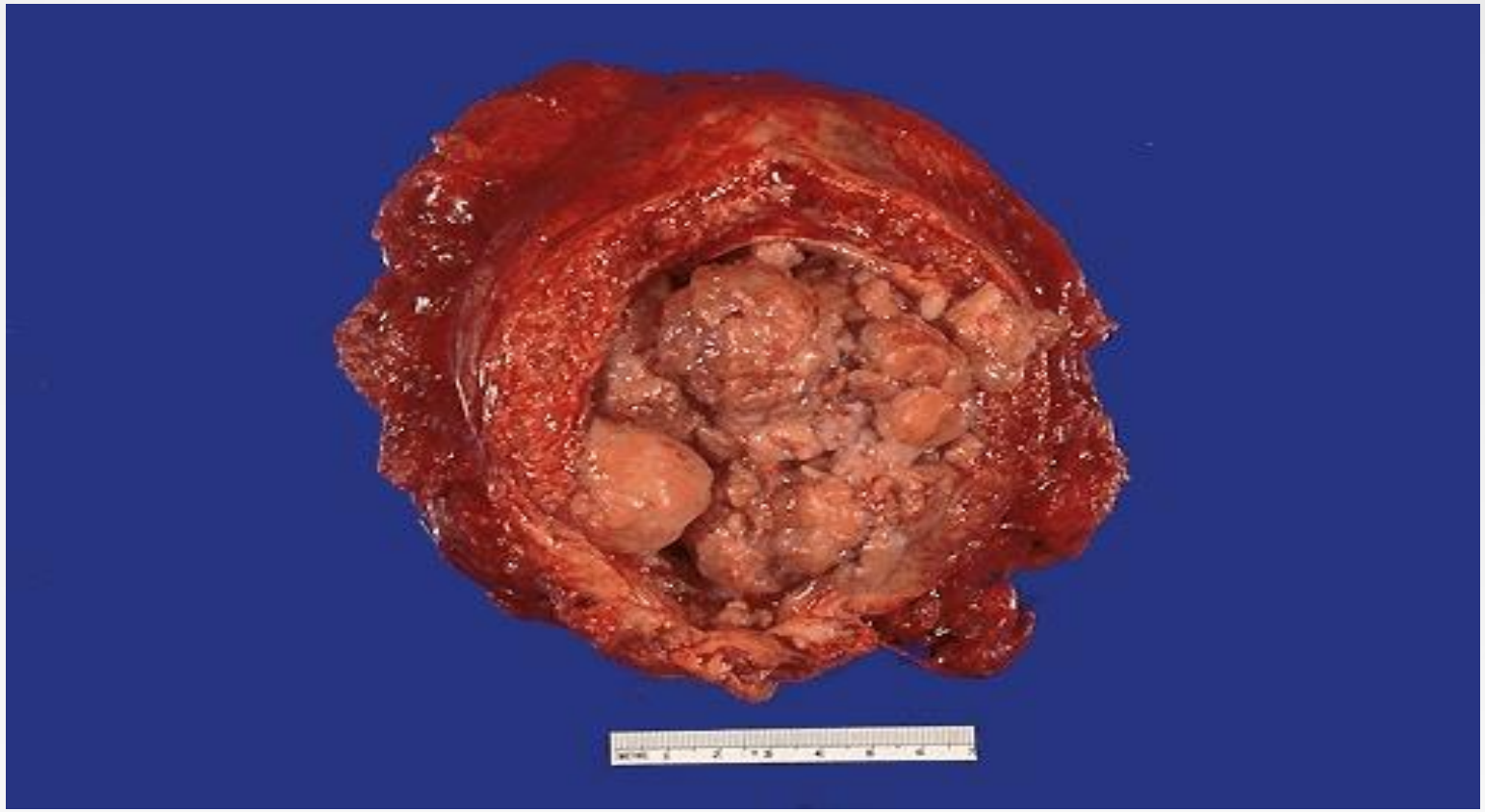
- classified into :

1 -benign papilloma: rare

2-papillary urothelial neoplasms of low grade: most frequent

3-papillary urothelial carcinoma of high grade

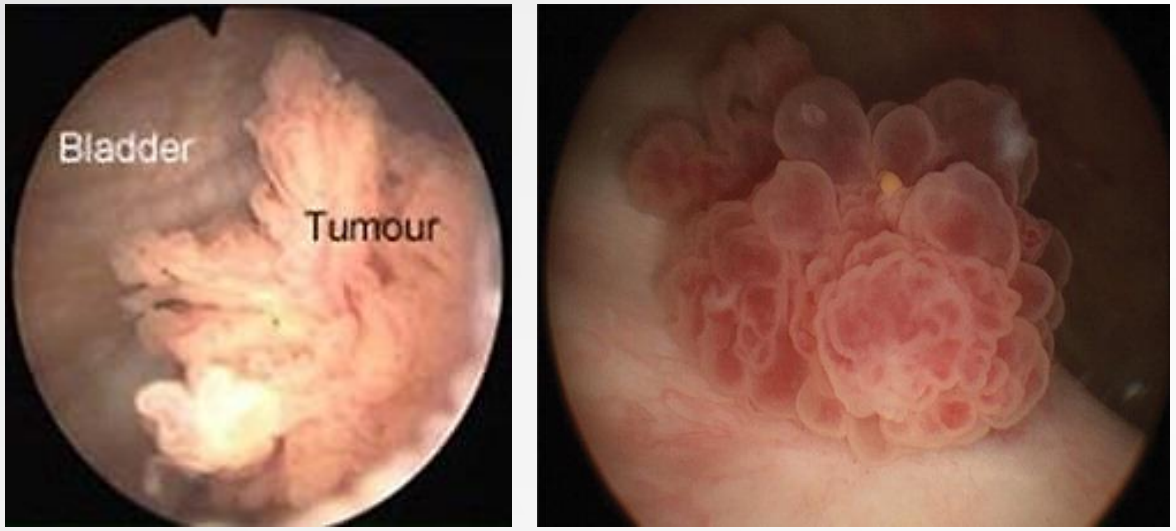
TRANSITIONAL CELL CARCINOMA OF BLADDER

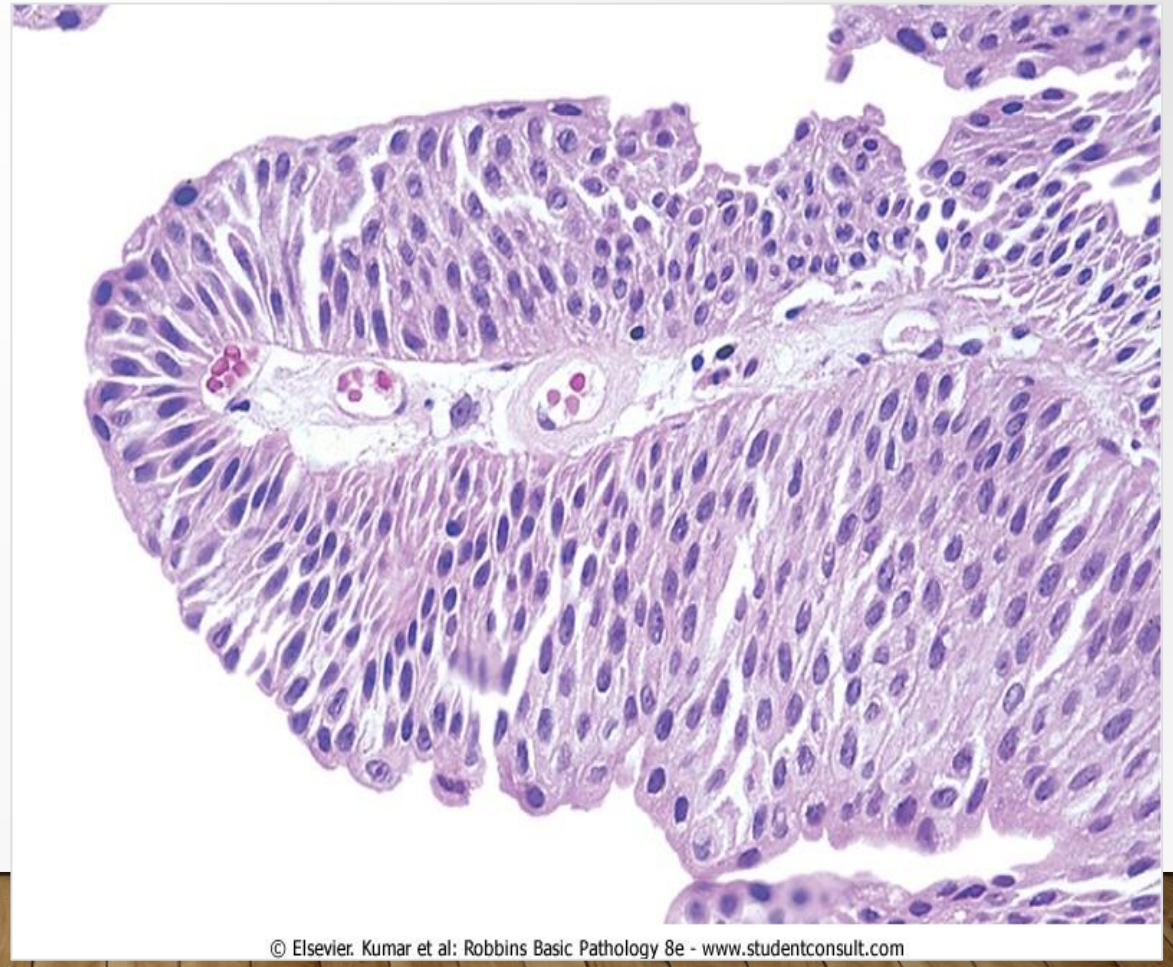


UROTHELIAL (TRANSITIONAL) CELL CARCINOMAS

- Low-grade carcinomas are rarely invasive.
- may recur after removal.
- staging at the time of initial diagnosis is the most important prognostic factor

PAPILLARY UROTHELIAL (TRANSITIONAL) CARCINOMA-LOW GRADE





SQUAMOUS CELL CARCINOMAS

- only 5% of bladder cancers
- Associated with:
- **Schistosomiasis** infection
- **chronic inflammation**
- **stone** formation

CLINICAL COURSE OF BLADDER CANCERS

- ***Painless hematuria.***
- **M:F 3:1**
- **50 to 70 years.**
- **Prognosis**
- low-grade + shallow →good prognosis.
- High grade lesions + deep →bad

- **Predisposing factors of bladder cancers :**
- **not familial.**

1- β-naphthylamine (paints; cigarettes)

2- Cigarette smoking.

3- Chronic cystitis.

4- Schistosomiasis.

5- drugs as cyclophosphamide.

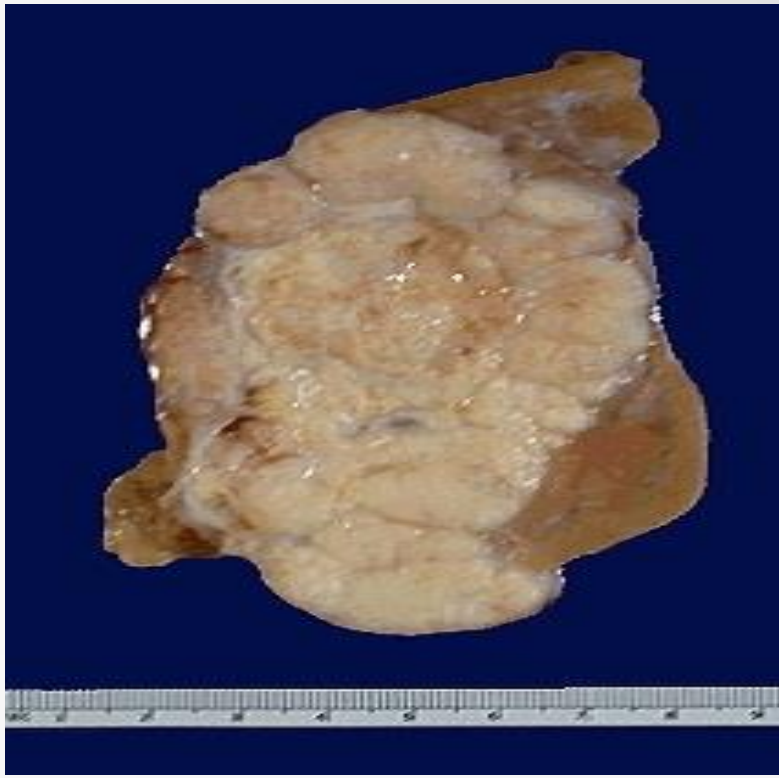
Treatment:

- transurethral **resection in cystoscopy**
- (**BCG**) injections➔ granulomatous reaction (immune response against cancer)
- Radical **cystectomy** and **chemotherapy** for advanced cases
- Follow-up for recurrence with **cystoscopy** and urine cytologic studies for the rest of life.

Renal tumors of childhood

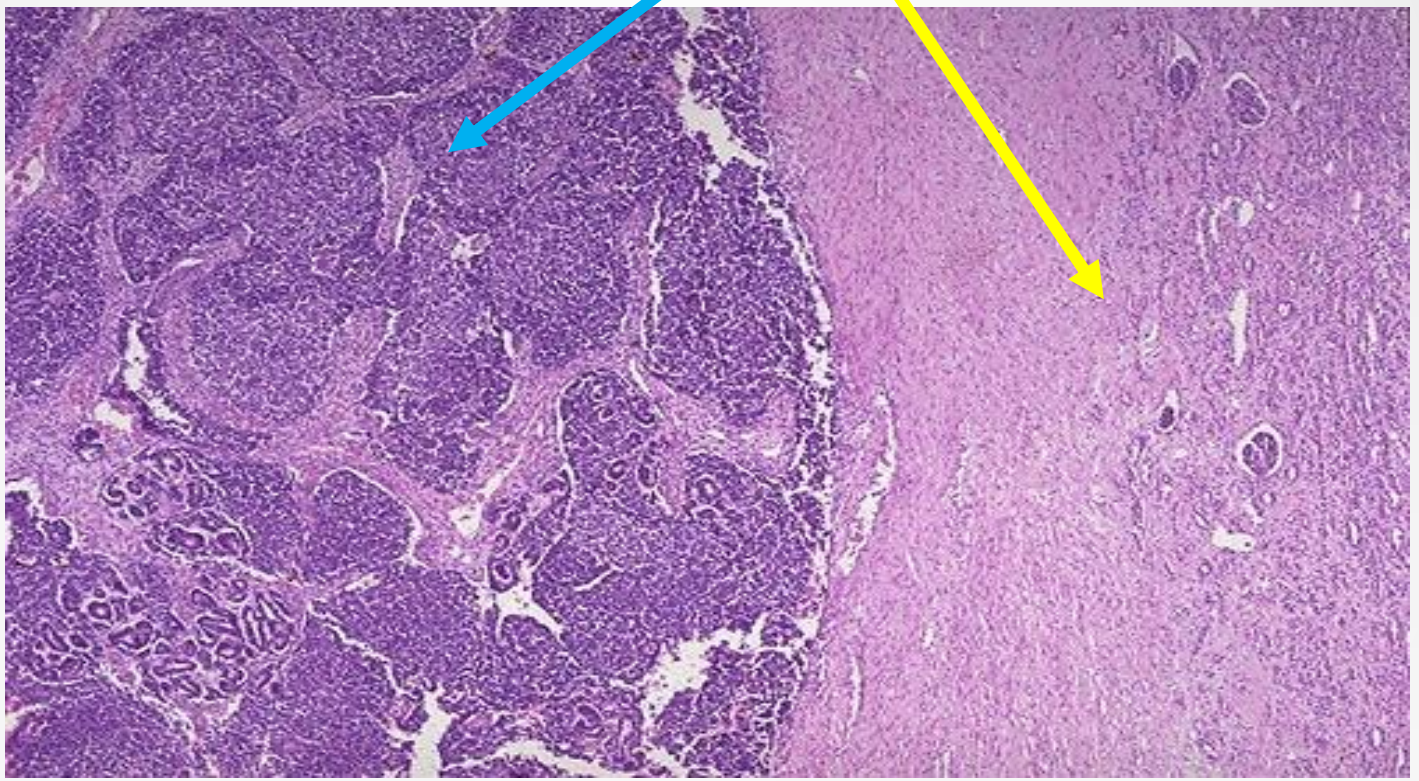
WILMS TUMOR

- 3rd most common solid cancer < 10 years.
- derived from the mesoderm.
- sporadic or familial (autosomal dominant).
- Mutations: **WT-1 and 2** genes.
- primitive glomerular and tubular structures
- Treatment: surgery & chemotherapy



WILM'S TUMOR

NESTS AND SHEETS OF DARK **BLUE** CELLS OF WILMS TUMOR AT THE LEFT WITH COMPRESSED NORMAL RENAL PARENCHYMA AT THE RIGHT.



WILMS TUMOR:
THE TUMOR SHOWS ATTEMPTS TO FORM PRIMITIVE GLOMERULAR AND TUBULAR STRUCTURES