

Kidney

Nephrotic syndrome

- Proteinuria
- Hypoalbuminemia
- Generalized edema
- Hyperlipidemia and lipiduria
- ❖ a derangement in the capillary walls of the glomeruli that results in increased permeability to plasma proteins.
- ❖ Podocyte injury is an underlying mechanism of proteinuria



Nephritic Syndrome

- Hematuria
- Proteinuria
- Azotemia
- Hypertension
- ❖ inflammatory lesions of glomeruli.
- ❖ The most common cause is immunologically mediated glomerular injury;
- ❖ Acute post infectious glomerulonephritis typically occurs after streptococcal infection.
- ❖ May also be related to systemic conditions such as lupus erythematosus

Chronic kidney disease

the presence of a diminished GFR that is persistently less than 60 mL/min/1.73 m² for at least 3 months, from any cause, and/or persistent albuminuria. Results from progressive scarring in the kidney of any cause.

Renal stones / calculi

- ❖ Mechanism: the most important determinant is an increased urinary concentration of the stones' constituents, such that it exceeds their solubility (supersaturation).
- ❖ The most common type is calcium oxalate and phosphate stones.



Cystic diseases of the kidney

Cysts originate from renal tubules, growing and filling with fluid, compressing surrounding tissue.

Simple cyst

- ❖ They are translucent, covered by a gray, glistening, smooth membrane, and filled with clear fluid.
- ❖ Simple cysts are common postmortem findings without clinical significance.



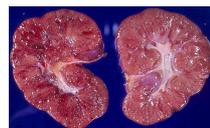
Polycyst

Adult

- Autosomal dominant
- Mutation produces polycystin protein
- Associated with conditions in other organs such as: cysts in liver, berry aneurysm, colonic diverticula

Children

- Autosomal recessive
- Mutation produces Fibrocystin protein
- Associated with multiple liver cysts



Pyelonephritis

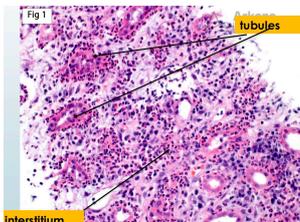
inflammation affecting the tubules, interstitium, and renal pelvis

1) Acute pyelonephritis

- Ascending infection is the most common cause of pyelonephritis
- E. coli is the most common uropathogen isolated from urine or pus cultures
- Morphology:
- it is characterized grossly by abscess in cortex of the kidneys, and microscopically by neutrophils infiltration in tubules and interstitium

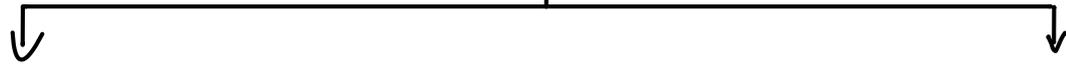
2) Chronic pyelonephritis

- Morphology: scarring due to chronic injury/ Diffuse, patchy lymphoplasmacytic tubulointerstitial inflammation (thyroidization).



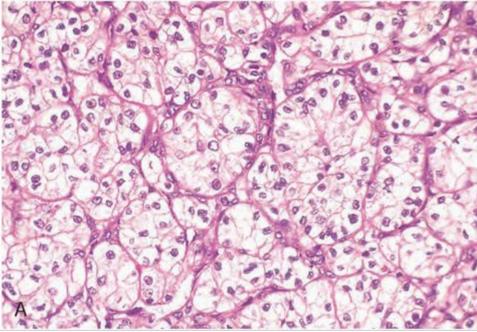
Renal Cell Carcinoma (RCC)

- The most common malignant cancer of the kidney
- Tobacco is the most significant risk factor



1) Clear cell carcinoma

- the most common type.
- Clear cytoplasm



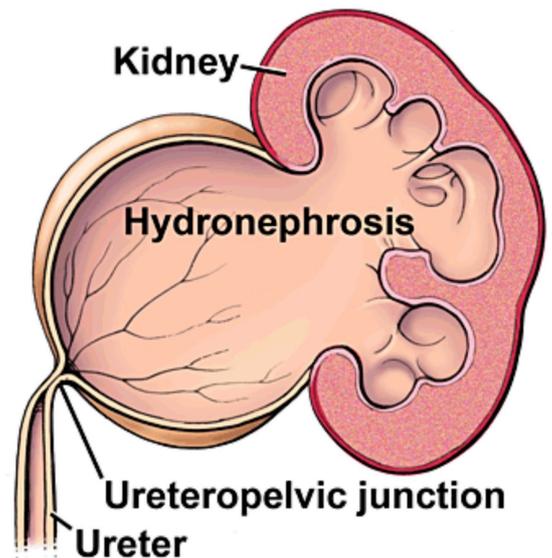
2) Papillary carcinoma:

- Papillary pattern of growth and psammoma bodies

Ureter

Congenital anomalies:

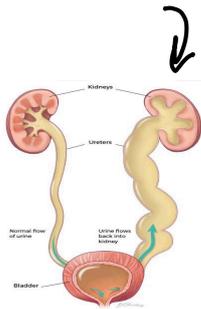
- Ureteropelvic junction (UPJ) obstruction is the most common cause of hydronephrosis in infants and children



Urinary bladder

Cystitis

- Causes: bacterial: *E. coli* (the most common pathogen)
- Clinically:
 - 1) Frequency: urination every 15-20 minutes
 - 2) Suprapubic pain
 - 3) Dysuria: painful or burning sensation during urination.
 - 4) Fever



- ❖ Vesicoureteral reflux is the most common and serious congenital anomaly.

Congenital anomalies

- ❖ Exstrophy of the bladder the bladder communicates directly with the abdominal surface

Urothelial neoplasm (Transitional Cell Carcinoma)

- ❖ The most common type of urinary bladder cancer
- ❖ Clinically: painless hematuria (the most common symptom)
- ❖ Morphology: The individual finger-like papillae have a central core of loose fibrovascular tissue, covered by malignant urothelium

