ANOMALIES OF KIDNEY
AND URETER

Learning objectives
• At the end of the lecture the student should be able to:
• Identify clinical conditions related to kidney and ureter
• Differentiate between the congenital abnormalities and pathological conditions of kidney and ureter.

Congenital abnormalities of kidney and ureter
• Anomalies of shape & positions are most common.
• Renal aplasia
• Renal agenesis
• Ectopic kidney
• Horse shoe kidney
• Polycystic kidney disease
• Ectopic ureter
• Megaureter

Absence of one kidney
• Congenital aplasia
• Failure to develop one kidney
• Kidney started to develop but fail to grow
• Can be found during ultrasounds examination, CT scanning and Pyelogram studies
• Ureter absent
• No ureteric orifice found during cystoscopy
• Or ureter and renal pelvis are present but the kidney absent

Renal agenesis
• Renal agenesis is a unilateral or bilateral medical condition in which fetal kidneys fail to develop
leading to oligohydramnios
- Complete absence of kidney
- Unilateral Agenesis
- Occur 1/100 new born
- Males are affected more than females.
- Left kidney is usually absent
- Suspected in infants with single umbilical arteries.

Bilateral Agenesis
- Failure of both a fetus' kidneys to develop during gestation
- Associated with oligo-hydramnios
- Deficiency of amniotic fluid places extra pressure on the developing baby and cause further malformations.
- It is not always the result of a genetic disorder, more common in infants born to one or more parents with a malformed or absent kidney.
- Common in males
- Is incompatible with post natal life.

Ectopic Kidney
- One or both kidney may be in an abnormal position
- Ectopic kidney describes a kidney that is not located in its usual position.
- mostly located in pelvis
- It is not symptomatic, the only problem is that during the abdominal operations the pelvic kidney is mistaken for an abnormal tumour and may be injured
- Often supplied by multiple vessels

Crossed Renal Ectopia
- Crossed Renal Ectopia - with or without fusion. Some times kidney crosses to other side
Horse Shoe Kidneys

- Patient's kidneys fuse together to form a horseshoe-shape during development in the womb.
- Poles (lower) of kidney are fused
- Common, found in 1/400 births
- Large U shaped kidney usually lie in hypogastric region
- they are caught by root of inferior mesenteric artery
- Usually produce symptom of obstruction
- duplication of ureteric bud & renal pelvis are common
- complete division result in double kidney with or bifid ureter

Supernumerary kidney

- Additional kidney to the number usually present in an organism
• Results from formation of metanephric diverticulum

Simple Renal Cyst

• Common
• Multiple
• Diagnosed on ultrasound
• Rarely require treatment
• Treat only if causing obstruction

Cystic Kidney

• Presence of multiple cysts (hence, "polycystic") in both kidneys.
• The cysts are numerous and are fluid-filled resulting in massive enlargement of the kidneys.
• result in renal sufficiency
• Two types
  – Autosomal dominant
  – Autosomal recessive fatal
• may survive if postnatal dialysis & kidney transplantation is done
Ectopic ureter

- **Ectopic ureter** (or **ureteral ectopia**) is a medical condition where the ureter, rather than terminating at the urinary bladder, terminates at a different site.
  - In males
    - Usually urethra
  - In females
    - Usually the urethra or vagina
- Incontinence is a usual common complaint
- Found in 1 of every 2000–4000 patients

Megaureter

- **Megaureter** is an anomaly whereby the ureter is abnormally dilated.
  - Uncommon condition
  - Common in males
  - May be bilateral
  - Often associated with other congenital anomalies.
  - The cause is thought to be aperistalsis of the distal ureter, leading to dilatation.
Double renal arteries

- Two or more renal arteries are most common on the left
- Functional end arteries – infarction if divided
- Veins can be divided because they have collaterals
Pathological conditions of kidney and ureter

- **Hydronephrosis**
- **Nephrolithiasis**
- **Ureteritis**

### Hydronephrosis

- **Hydronephrosis** is distension and dilation of the renal pelvis calyces, usually caused by obstruction of the free flow of urine from the kidney.
- Leads to progressive atrophy of the kidney.

### Nephrolithiasis

- **Nephrolithiasis** refers to the condition of having kidney stones.
- **Ureterolithiasis** – Result from stones or renal calculi in the ureter
- The stones are solid concretions or calculi (crystal aggregations) formed in the kidneys from dissolved urinary minerals.
- Kidney stones typically leave the body by passage in the urine stream, and many stones are formed and passed without causing symptoms.
- If stones grow to sufficient size before passage (usually at least 2-3 millimeters), they can cause obstruction of the ureter.
References

- Gray’s textbook of anatomy
- Internet

Thank you