Emergencies in Urology

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Emergencies in Urology

Urologic emergency arises when a condition require rapid diagnosis and immediate treatment

Emergencies in Urology

A- NON genital

1. Hematuria
2. Renal Colic
3. Urinary Retention
4. Infection
5. Acute renal failure
6. Trauma
   - Renal Trauma
   - Ureteral Injury
   - Bladder Trauma
   - Urethral Injury

B- Genital

1. Phimosis
2. Paraphimosis
3. Priapism
4. Penile fracture
5. Acute Scrotum

Hematuria

Blood in the urine

Types:

Macroscopic (frank, or gross hematuria)

Microscopic hematuria (the presence of >3 red blood cells per high power microscopic field).

Painless or painful.

Initial /Terminal /Total

Hematuria…Causes

Nephrological (medical) or urological (surgical)

A- Medical causes: glomerular and nonglomerular

blood dyscrasias ,drugs , interstitial nephritis, GN

B- urological nonglomerular causes:

Tumours , BPH, Stones and trauma.

Haematuria in these situations is usually characterised by circular erythrocytes and absence of proteinuria and casts.

Hematuria…investigations

Presentation:

Hematuria

Urine retention or ureteric colic (Clot retention)

Work Up :

History of drug intake

Urine analysis

Lab investigation for bleeding

Radiology …….CTU

Endoscopy (cystoscopy or flexible URS)

Treatement of the cause

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RENAL COLIC

The commonest urologic emergency.

Clinical picture

DD

Ovarian pathology (e.g., twisted ovarian cyst)

Acute appendicitis

Diverticulitis

Ectopic pregnancy

INVESTIGATION

US , KUB , CTU is the best why? …….(no IVU)

PREGNANCY …….MRU

Renal colic….

Indications for Intervention to Relieve Obstruction and/or Remove the Stone:

1. Pain that fails to respond to analgesics.
2. Associated fever.
3. Renal function is impaired because of the stone (solitary kidney obstructed by a stone, bilateral ureteric stones, or preexisting renal impairment)
4. Obstruction unrelieved for >4 weeks
5. Personal or occupational reasons

Renal colic….

Treatment of the Stone:

- Temporary relief of the obstruction:
  - Insertion of a JJ stent or percutaneous nephrostomy tube.
- Definitive treatment of a ureteric stone:
  - ESWL.
  - PCNL
  - Ureteroscopy

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Urinary Retention

Acute Urinary retention

Chronic Urinary retention

Acute Urinary retention

Painful inability to void with full bladder

Causes……..

A- infravesical obstruction…… ….

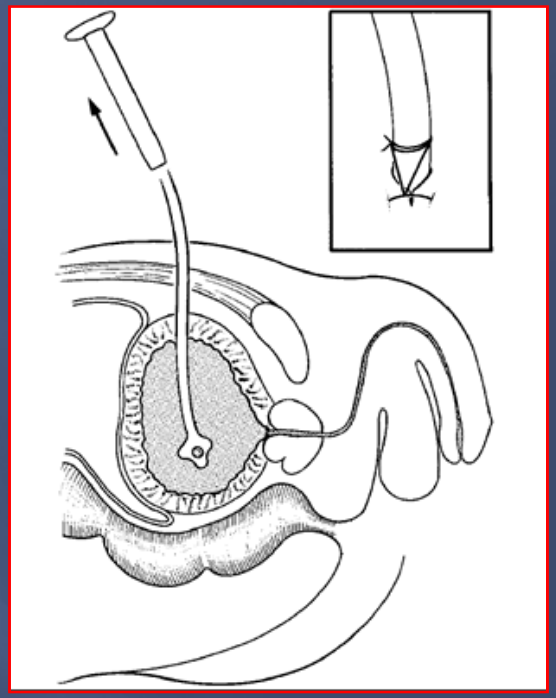
B- **impaired bladder contractility** **(Neurological causes)**

- Sacral nerve compression or damage (cauda equina compression)
- **Reflex pain as postoperative**
- Neurotropic viruses involving the sensory dorsal root ganglia of S2–S4 (herpes simplex or zoster);
- Multiple sclerosis
- Transverse myelitis

Acute Urinary retention

- **Initial Management :**
  - Urethral catheterisation
  - Suprapubic catheter (SPC)

- **Late Management:**
  - Treating the underlying cause



Chronic urinary retention

Obstruction develops slowly, the bladder is distended (stretched) very gradually over weeks/months

Presentation:

Frequency ,,, diurnal enuresis ,, diurnal and nocturnal enuresis

Palpable lower suprapubic mass

Aetiology ……chronic infravesical obstruction

Treatment Bladder drainage under slow rate to avoid sudden decompression> hematuria

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Infection

- Obstructed infected kidney
- Abcess (renal ,, prostatic,, scrotal)
- Perineph abcess

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RENAL FAILURE

1. Acute renal failure (ARF) :

It is a rapid deterioration of the renal function over a period of hours to days, resulting in failure to maintain fluid and electrolyte homeostasis and to excrete nitrogenous waste products.

ARF is characterized by progressive azotemia (best measured by serum creatinine levels). It may and may not be accompanied by oliguria and it can be reversible condition if managed early and properly.

2. Chronic renal failure (CRF) :

It is an established, slowly progressive renal deterioration. Generally applied in cases of renal failure of more than several months duration.

ACUTE RENAL FAILURE : Causes

A- Pre-renal causes :

Hypovolaemia : As due to severe hypotension, dehydration, and massive bleeding.

B- Renal causes :

Due to acute or extensive renal parenchymal disease e.g. acute tubular necrosis, glomerulo-nephritis,..

ACUTE RENAL FAILURE : Causes

C- Post-renal (obstructive anuria):

complete bilateral ureteral obstruction or complete obstruction of the ureter of an only functioning kidney

1- Bilateral ureteral stones : It is the commonest type of the post-renal anuria, and so called calcular anuria.

2- Malignancy infiltrating the both ureters :

Bladder cancer.

3- Post-traumatic or iatrogenic ureteral obstruction :

Abdomino-perineal surgeries.

Gynaecological and obstetric surgeries e.g. caesarean section.

ACUTE RENAL FAILURE : Clinical picture

A. Renal pain (OBSTRUCTIVE TYPE)

Associated renal pain occurs if there is renal obstruction.

B. Fluid overload :

Volume overload and electrolyte disturbances that occur due to renal failure can lead to multiple systemic manifestations :

1. Gastro-intestinal manifestations : Anorexia, nausea, vomiting.
2. Respiratory manifestations : Acidotic breath is the main respiratory sign.
3. Central nervous system : irritability , Disturbed concious level and even uraemic coma
4. Cardiovascular manifestations : Hypertension, generalized edema, congestive heart failure , pulmonary oedema.

ACUTE RENAL FAILURE : Investigations laboratory

1- Blood urea and serum creatinine :

The cardinal feature of ARF is a decline in the glomerular filtration rate (GFR). In routine clinical practice it is usually identified by a rise in the serum blood urea and creatinine levels.

2- Creatinine clearance :

Measurement of craetinine clearance in ml\min is the best accurate test to determine occurance of ARF. Creatinine is an endogenous product of muscle metabolism produced at a fairly constant rate of about 1 mg/min in an average size-adult. Clearance of cratinine from the blood approximates the GFR (120 ml/min).

3- Serum electrolytes :

Hyperkalemia and acidosis.

ACUTE RENAL FAILURE : Investigations Radiology

1- Abdominal Ultrasonography

2- Abdominal plain radiograph (KUB) : It is mainly for radio-opaque stone detection

3- CTU

ACUTE RENAL FAILURE : Treatement

Dialysis is indicated if there is:

1- Pericarditis.

2- Altered mental status.

3- Hyperkalemia.

4- Acidosis…….breathing

5- Fluid overload……pulmonary oedema.

ACUTE RENAL FAILURE : Treatment

1- Pre renal …….. ttt of the cause

2- Renal ……. Forced diuresis :

It is an aggressive fluid repletion with diuretics (loop diuretic as furosemide or an osmotic diuretic as manitol (better).

If failed …….dialysis

3- Post renal :

If the patient general condition is bad: as acidosis,, disturbed concious level…….dialysis (2 or 3 sessions) till improvement of the general condition

If the general condition is good…….relief obstruction with a temporal minimally invasive maneuver (passing ureteral catheter or percutaneous nephrostomy tube PCN).

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RENAL INJURIES

The kidneys relatively protected from traumatic injuries so considerable degree of force is usually required to injure a kidney.

- Mechanisms and cause:
  - Blunt
    - direct blow
    - acceleration/ deceleration (road traffic accidents, falls from a height, fall onto flank)
  - Penetrating
    - knives, gunshots

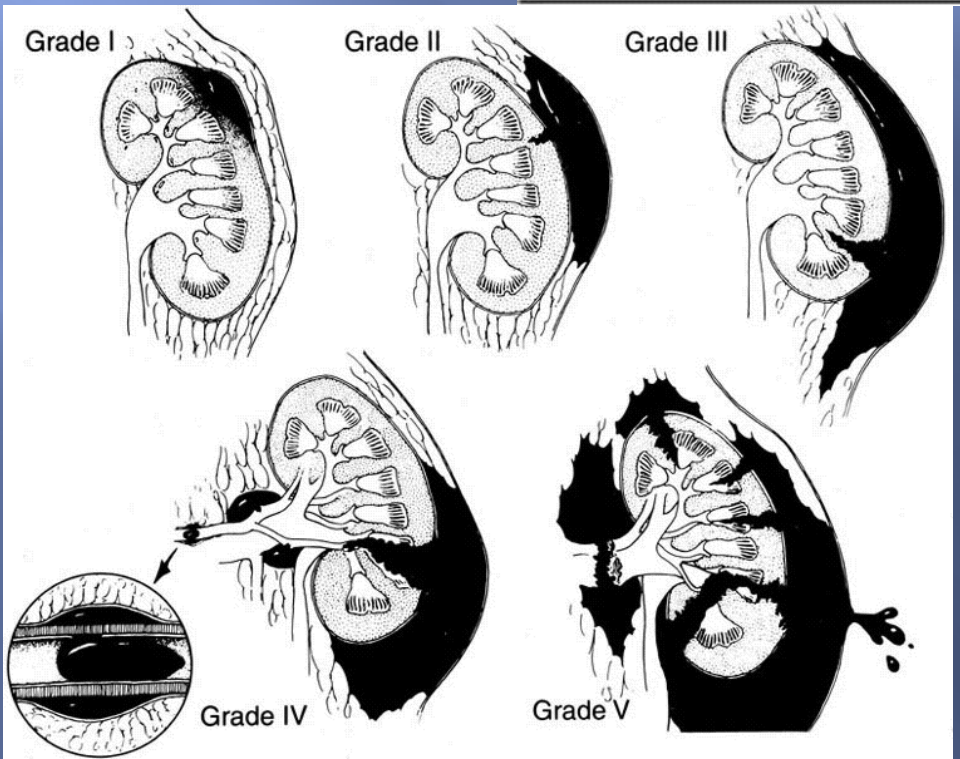
RENAL INJURIES

Indications for renal imaging:

- Macroscopic hematuria
- Microscopic [>5 red blood cells (RBCs) per high powered field] a hypotensive patient (SBP <90mmHg)
- Penetrating chest, flank, and abdominal wounds

- **What Imaging Study?**
  - Abdominal US
  - contrast-enhanced CT scan

Grade*	Type	Description
I	Contusion	Microscopic or gross hematuria, urologic studies normal
	Hematoma	Subcapsular, nonexpanding without parenchymal laceration
II	Hematoma	Nonexpanding perirenal hematoma confined to renal retroperitoneum
	Laceration	<1-cm parenchymal depth of renal cortex without urinary extravasation
III	Laceration	>1-cm parenchymal depth of renal cortex without collecting system rupture or urinary extravasation
IV	Laceration	Parenchymal laceration extending through renal cortex, medulla, and collecting system
	Vascular	Main renal artery or vein injury with contained hemorrhage
V	Laceration	Completely shattered kidney
	Vascular	Avulsion of renal hilum, devascularizing the kidney



RENAL INJURIES MANAGEMENT

Non-operative Management:

98% of renal injuries can be managed non-operatively.

Surgical exploration:

- Grade IV and V injuries more often require surgical exploration.
- Evidence of persistent renal bleeding,
- Expanding perirenal hematoma,
- Pulsatile perirenal hematoma.
- Penetrating trauma usually need exploration but can be managed non-operatively if carefully staged with CT.

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URETERIC INJURIES

- The ureters are protected from external trauma by surrounding bony structures, muscles and other organs
- **Causes and Mechanisms :**
  - External Trauma
  - Internal Trauma

Ureteric injuries…

- **External Trauma**:
  - Rare, Severe force is required
  - penetrating.
  - Knife or bullet wound to the abdomen or chest may damage the ureter, as well as other organs.
- **Internal Trauma**
  - more common than external trauma
  - Surgery:
    - Hysterectomy,
    - oophorectomy,
    - sigmoidcolectomy
    - Caesarean section

Ureteric injuries…

Diagnosis:

- Requires a high index of suspicion
- Intraoperative:
- Late:

1. An ileus: the presence of urine within the peritoneal cavity seen by US as a free intraperitoneal fluid
2. Prolonged postoperative fever
3. Persistent drainage of fluid from abdominal or pelvic drains.

TTT

Drain + PCN for later on operation

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BLADDER INJURIES

- Causes:
  - Iatrogenic injury
    - Transurethral resection of bladder tumour (TURBT)
    - Cystoscopic bladder biopsy
    - Transurethral resection of prostate (TURP)
    - Cystolitholapaxy
    - Caesarean section, especially as an emergency
  - Penetrating trauma to the lower abdomen
  - Blunt pelvic trauma—in association with pelvic fracture

Types of Perforation

A-intraperitoneal perforation

the peritoneum overlying the bladder, has been breached along with the wall of the bladder, allowing urine to escape into the peritoneal cavity…….drain + exploration.

B- extraperitoneal perforation

the peritoneum is intact and urine escapes into the space around the bladder, but not into the peritoneal cavity…..+_ drain only

Thank you