Lec:4

Urological Emergencies

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A. Traumatic

1. Renal Trauma
2. Ureteral Injury
3. Bladder Trauma
4. Urethral Injury
5. Testicular Trauma

A. Non traumatic

1. Hematuria
2. Renal Colic
3. Urinary Retention
4. Acute Scrotum
5. Priapism

1. Acute urinary retention

Definition

- Painful inability to void, with relief of pain following drainage of the bladder by catheterization.
- The combination of reduced or absent urine output with lower abdominal pain is not, in itself, enough to make a diagnosis of acute retention.
- Many acute surgical conditions cause abdominal pain and fluid depletion, the latter leading to reduced urine output, and this reduced urine output can give the erroneous impression that the patient is in retention.
- Central to the diagnosis is the presence of a ***large volume*** of urine which, when drained by catheterization, leads to resolution of the pain. What represents 'large' has not been strictly defined, but volumes of **500**–800mL are typical.

Pathophysiology

⇒ **Normal micturition requires**:

1. Afferent input to the brainstem and cerebral cortex.
2. Coordinated relaxation of the external sphincter.
3. Sustained detrusor contraction.
4. The absence of an anatomic obstruction in the outlet of the bladder.

⇒ **Four broad mechanisms can lead to urinary retention:**

1. Increase urethral resistance (i.e. BOO).
2. Low bladder pressure (i.e. impaired bladder contractility).
3. Interruption of sensory or motor innervation of the bladder.
4. Central failure of coordination of bladder contraction with external sphincter relaxation.

Causes acute urinary retention in men

1. Prostatic problem: Benign prostatic hyperplasia (BPH), prostate cancer, prostatic abscess.
2. Urethral stricture.

⇒ Urinary retention in men is either spontaneous or precipitated by an event.

⇒ Precipitated retention is less likely to recur once the event which caused it has been removed. Spontaneous retention is more likely to recur after a trial of catheter removal and therefore to require definitive treatment.

Causes acute urinary retention in women

1. Pelvic prolapse (cystocele, rectocele, uterine); urethral stricture; urethral diverticulum.
2. Post- surgery for 'stress' incontinence.
3. Pelvic masses (e.g., ovarian masses).
4. Fowler's syndrome: electromyographic (EMG) activity can be recorded in the external urethral sphincters of these women and is hypothesized to cause impaired relaxation of the external sphincter; occurs in premenopausal women, often in association with polycystic ovaries.

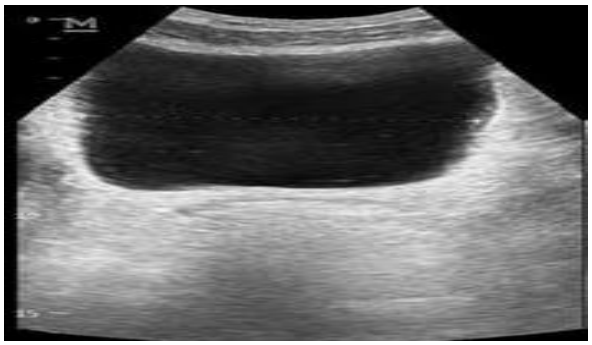
Causes of acute urinary retention in either sex

1. Hematuria, leading to clot retention.
2. Pain (adrenergic stimulation of the bladder neck).
3. Post- operative retention: Precipitating events include:
   ⇒ Anesthetic and other drugs (anticholinergics, sympathomimetic agents such as ephedrine in nasal decongestants, antihistamine).
   ⇒ Non- prostatic abdominal or perineal surgery.
   ⇒ Immobility: following surgical procedures.
4. Pelvic fracture rupturing the urethra (more likely in men than women).
5. Drugs.
   a. drugs with anticholinergic activity (e.g. antipsychotic drugs, antidepressant agents, Buscopan).
   b. opioids and anaesthetics.
   c. α-adrenoceptor agonists.
   d. Benzodiazepines.
   e. detrusor relaxants (DITROPAN).
   f. calcium channel antagonists

6. Neurogenic:
    a. Sacral cord (S2– 4) injury or compression or damage, resulting in detrusor areflexia.
    b. Suprasacral SCI [results in loss of coordination of external sphincter relaxation with detrusor contraction— so- called detrusor sphincter dyssynergia (DSD)— so the external sphincter contracts when the bladder contracts).
    c. Radical pelvic surgery damaging the pelvic parasympathetic plexus (radical hysterectomy, abdominoperineal resection): unilateral injury to the pelvic plexus denervates motor innervation of the detrusor muscle.
    d. Neurotropic viruses involving sensory dorsal root ganglia of S2–4 (herpes simplex or zoster).
    e. MS: can affect any part of the central nervous system (CNS); retention caused by detrusor areflexia or DSD.
    f. Diabetic cystopathy (causes sensory and motor dysfunction).

Risk factors for retention in men

1. Advancing age is a strong predictor of the risk of urinary retention in men.
2. Other factors that predict risk of urinary retention are the presence of LUTS (higher symptom scores), previous episodes of spontaneous retention, and larger prostate volume.

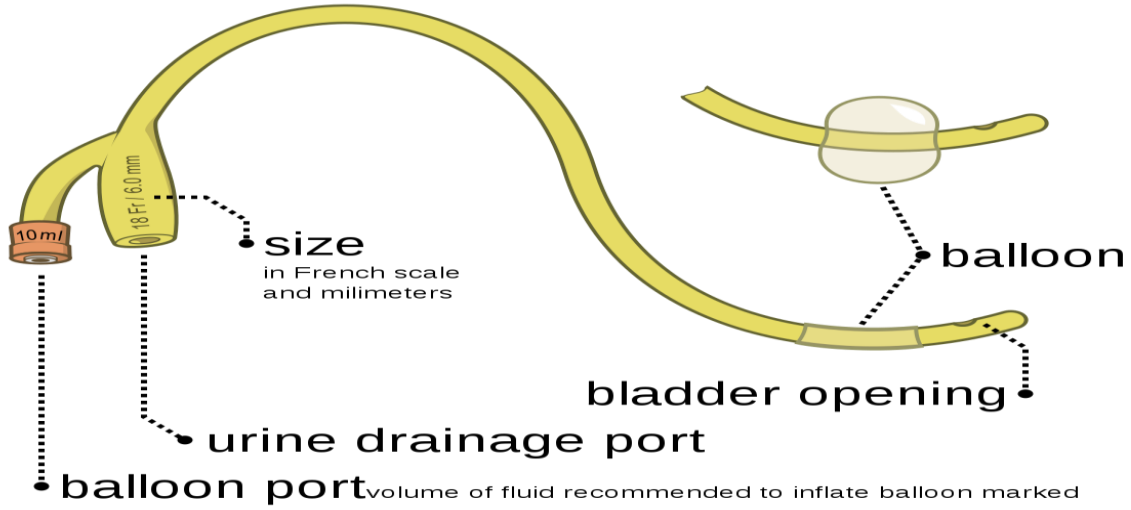
Management

A. Initial management

- Urethral catheterization to relieve pain (suprapubic catheterization if the urethral route not possible). Record the volume drained, this confirms the diagnosis, determines subsequent management.

B. Definitive management in men

- Precipitated retention often does not recur; spontaneous retention often does.
- 50% of *spontaneous* retention will experience a second episode of retention within the next week or so, and 70% within the next year.
- Treat the cause.



2. Phimosis

- A condition in which the foreskin can't be retracted (pulled back) from around the tip of the penis. A tight foreskin is common in baby boys who aren't **circumcised,** but it usually stops being a problem by the age of 3.

- Phimosis can occur naturally or be the result of scarring. Young boys may not need treatment for phimosis unless it makes urinating difficult or causes other symptoms.

- **Cause:** Inflammation or an infection of the foreskin or head of penis (glans).

- **Treatment**: Depending on the severity of the condition.

1. A topical steroid ointment can be used to help soften the foreskin and make retraction easier. The ointment is massaged into the area around the glans and foreskin twice a day for several weeks.

2. daily gentle retraction may be enough to treat the problem.

3. In more serious cases, circumcision

3. Paraphimosis

- foreskin is retracted from over the glans of the penis, becomes edematous, and cannot then be pulled back over the glans into its normal anatomical position. It occurs most commonly in teenagers or young men and also in elderly men (in uncircumcised male).
- Paraphimosis is usually painful.
- Treatment: The 'iced glove' method: apply topical lidocaine gel to the glans and foreskin for 5min. Place ice and water in a rubber glove, and tie a knot in the cuff of the glove to prevent the contents from pouring out.
- Using a 25G needle; make punctures into the edematous foreskin. Squeeze the oedema fluid out of the foreskin, and return to its normal position.

  If this fails, the traditional surgical treatment is a dorsal slit under GA or ring block.

4. Priapism

Definition: Prolonged, unwanted erection, in the absence of sexual desire or stimulus, lasting >4h.

Classification

A. Low- flow (ischaemic) priapism:

- due to veno- occlusion (intracavernosal pressures of 80– 120mmHg).
- Commonest form (accounts for 95%), which manifests as a painful, rigid erection, with absent or low cavernosal blood flow.
- Ischaemic priapism for >4h requires emergency intervention. Blood gas analysis shows hypoxia and acidosis.

B. High- flow (non- ischaemic) priapism: due to unregulated arterial blood flow, presenting with a semi- rigid, painless erection. Caused by trauma (or surgery) to the penis or perineum, resulting in cavernosal artery laceration and subsequent formation of an arteriovenous fistula. It is often self- limiting. Blood gas analysis shows similar results to arterial blood.

C. Recurrent (or stuttering) priapism: intermittent, recurrent ischaemic episodes of priapism, of relatively short duration, which are often painful. Most commonly seen in sickle- cell disease.

Aetiology of ischemic priapism

A. primary (*idiopathic*)
B. secondary, including:
1. Oral drugs:
   a) Recreational drugs: cocaine, marijuana.
   b) Hormones: GnRH; testosterone.
2. Thromboembolic: sickle- cell disease, leukaemia, thalassaemia.
3. Infection: malaria, rabies, scorpion sting.
4. prostate or bladder cancer extending into the penis.

Management

⇒ *High- flow priapism: This* is not an emergency, as the penis is not ischemic. Conservative treatment is recommended in most cases, as the fistula can close spontaneously.

⇒ *Low- flow priapism:* Decompress urgently with aspiration of blood from the corpora.

5. Hematuria

- **What is the definition of HEMATURIA**? **anything >3 RBCs per HPF**
- **How can hematuria be distinguished from hemoglobinuria & myoglobinuria?**

⇒ Microscopy of centrifuged urine } presence of large number of erythrocytes = hematuria

⇒ Serum exam } pink supernatant after centrifugation = hemoglobinuria

⇒ clear supernatant after centrifugation = myoglobinuria

What are some causes of a FALSE +VE DIPSTICK reading for hematuria?

1. contamination of urine with menstrual blood
2. vigorous exercise
3. dehydration
4. hemoglobinuria/myoglobinuria.

What are the signs suggestive of hematuria of a nephrologic origin?

- Nephrological hematuria has more significant proteinuria (minimal seen in urologic hematuria)
- Glomerular:
  1. dysmorphic erythrocytes (seen on light phase microscopy)
  2. RBC casts.
  3. proteinuria
- Non-glomerular (tubulointerstitial, renovascular, systemic) uniformly round erythrocytes, no RBC casts, proteinuria

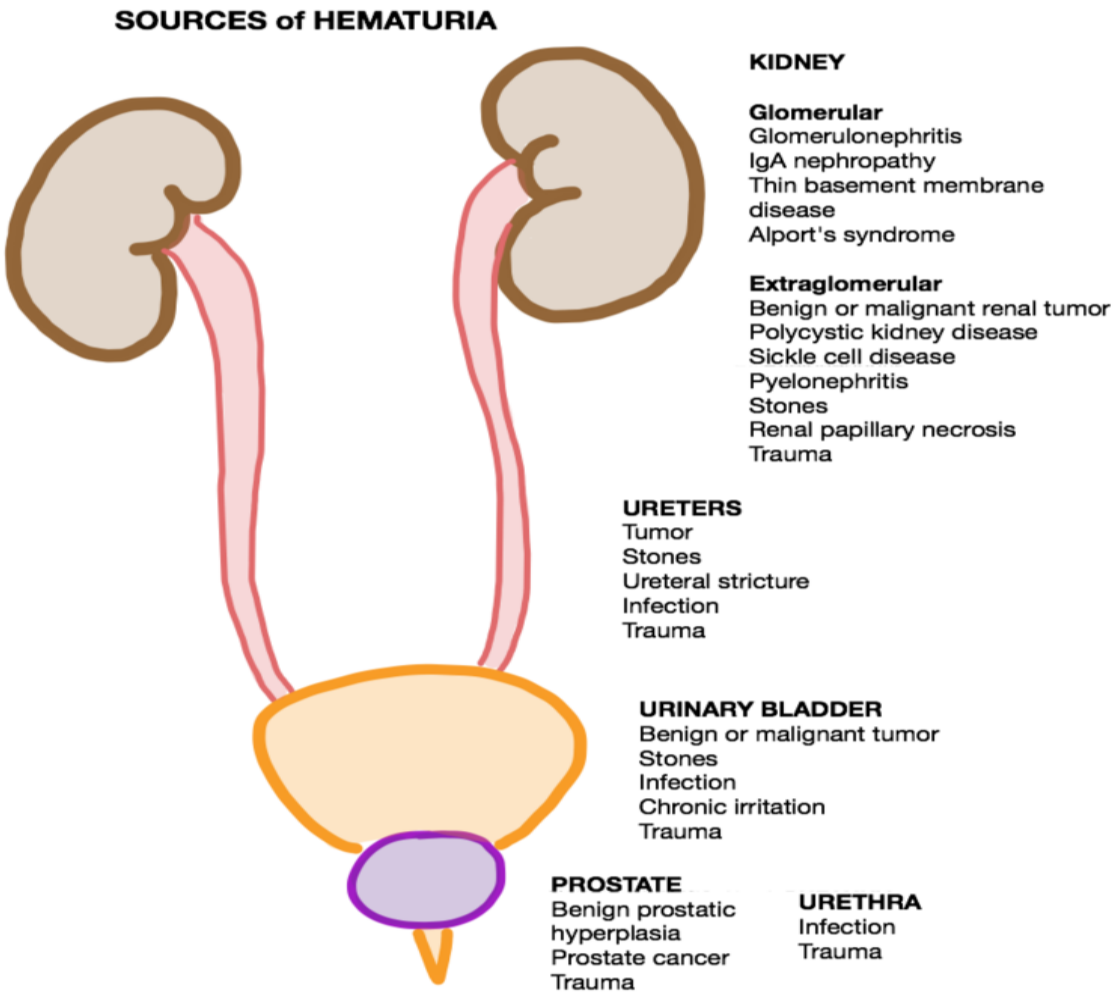
What is the most common cause of glomerular hematuria?

IgA nephropathy (Berger's disease) :30%

What are the non-glomerular diseases associated with hematuria?

1. **Tubulointerstitial**
   ⇒ AD PCKD
   ⇒ Renovascular: renal artery embolism and/or thrombosis
2. **Systemic**
   ⇒ hemophilia
   ⇒ thrombocytopenia
   ⇒ DIC
3. **Urologic/surgical**
   ⇒ tumours
   ⇒ UTIs
   ⇒ stones
   ⇒ trauma

4. **Papillary necrosis**: (DM, blacks with sickle cell, analgesic abusers, etc).



What are the AUA guidelines on microscopic hematuria?

microscopic hematuria = ≥3 RBC/HPF from a fresh MSU

1. High-risk patients: FULL UROLOGIC EVALUATION
    1. Hx and P/E
    2. Urine cytology
    3. CT with intravenous (IV) contrast
    4. Cystoscopy

High risk includes:

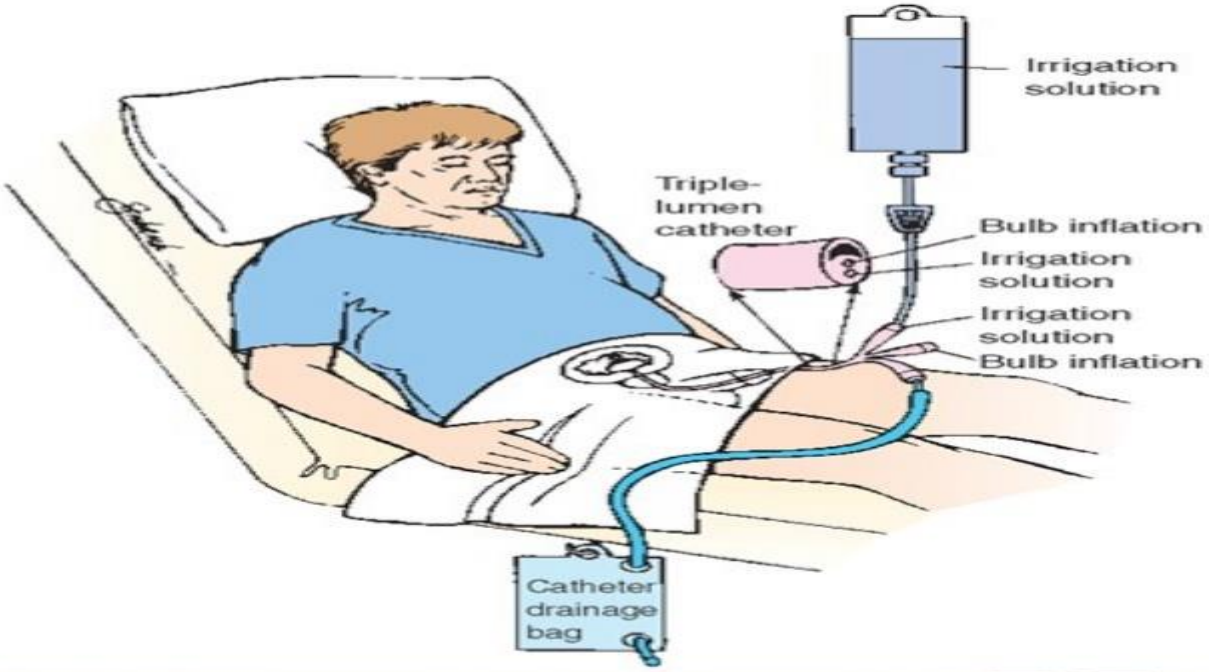
1. Smoking hx
2. Occupational exposure
3. Hx of gross hematuria
4. Age >40yrs
5. Hx of urologic disease
6. Hx of irritative symptoms
7. Hx of UTI
8. Analgesic abuse
9. Hx of pelvic RADs.

Management of Hemorrhagic Cystitis

- The management may occasionally be guided by the cause for the condition (treatment of infection), although in most cases no cause-directed therapy can be offered and instead a sequential approach, depending on the severity of the condition, should be undertaken.
- Supportive management represent the mainstay of first-line therapy and typically suffice for mild cases.

1. increasing urine output via hydration.
2. Catheter placement with continuous bladder irrigation.
3. Blood transfusion as needed.

- If hematuria continues and/or clotting of the urine cannot be controlled with bladder irrigation, cystoscopy under anesthesia with clot evacuation and fulguration of discrete bleeding sites is then recommended.



Continuous bladder irrigation

THANK YOU
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