جامعة ديالى – كلية الطب

Urology

المرحلة الخامسة

Lec:1 **Symptomatology**

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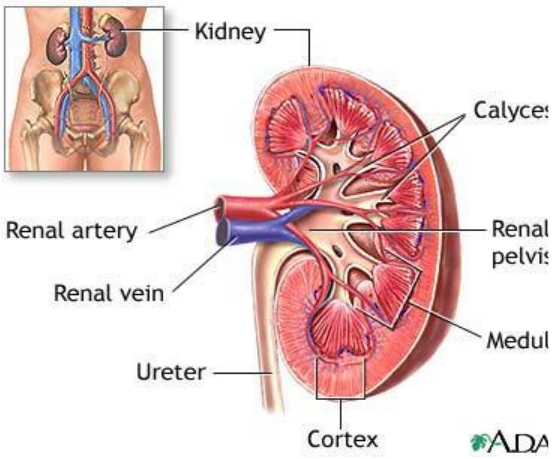
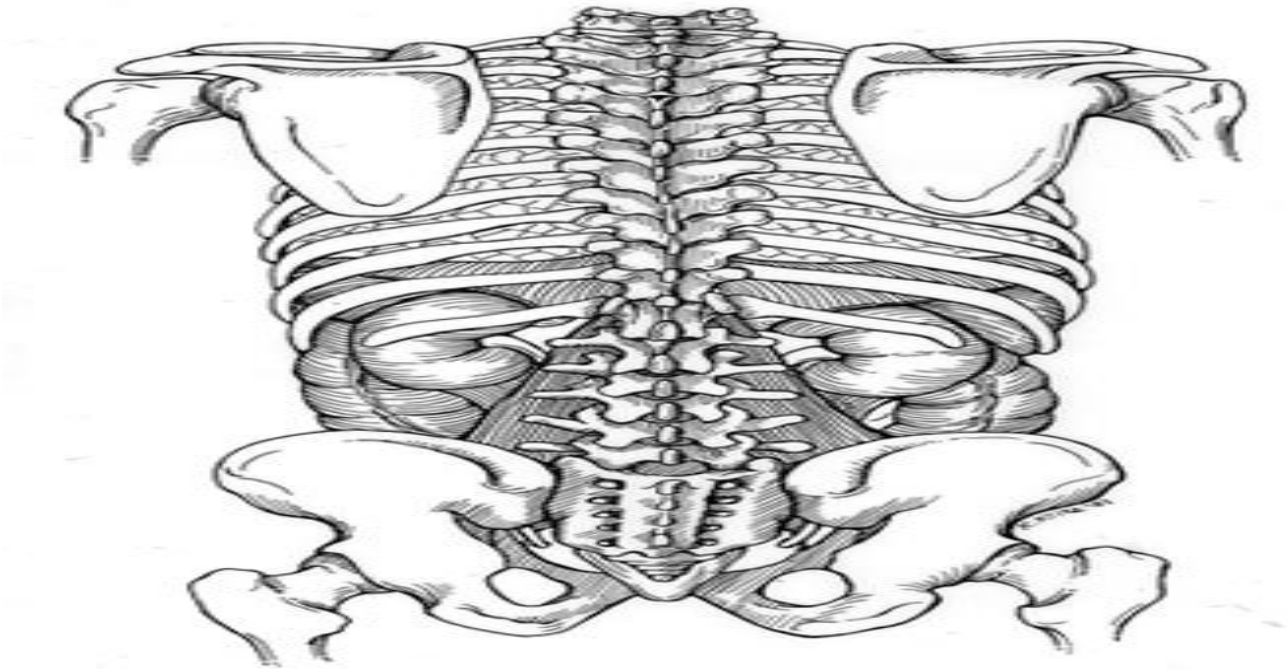
Anatomy

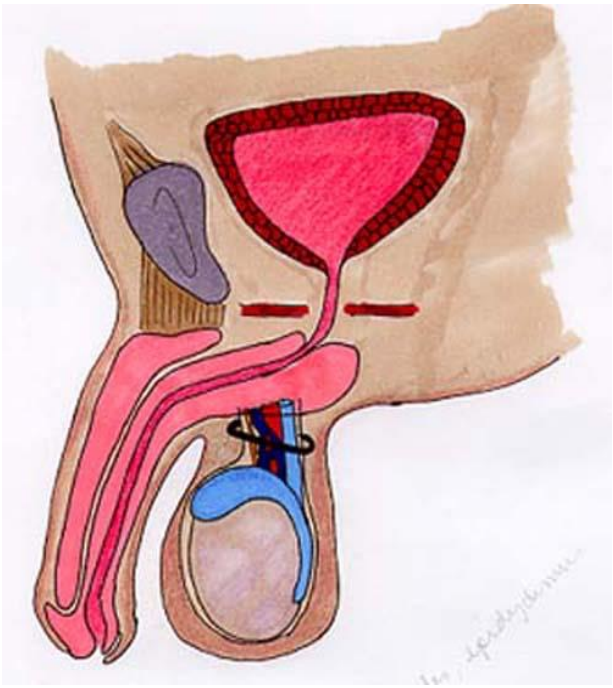


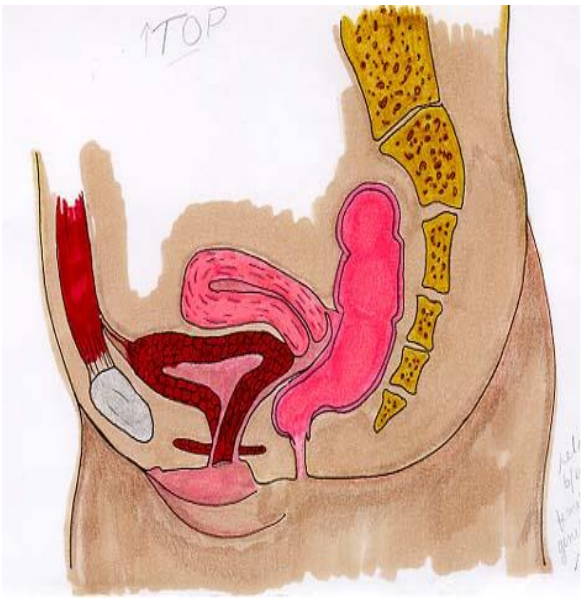
- Extra peritoneal system
- composed of two kidneys located in the upper abdomen protected by thoracic cage.
- Each weigh about 150 g.
- Each kidney supplied by main renal artery from aorta, divided into 5 segmental branches and drained by renal vein to the inferior vena cava.
- Collecting system: Composed of 3 major calyces, each drain 3-5 minor calyces, joins together to form renal pelvis which is connected to the bladder by muscular tube called the ureter.

Kidneys relation to the skeleton



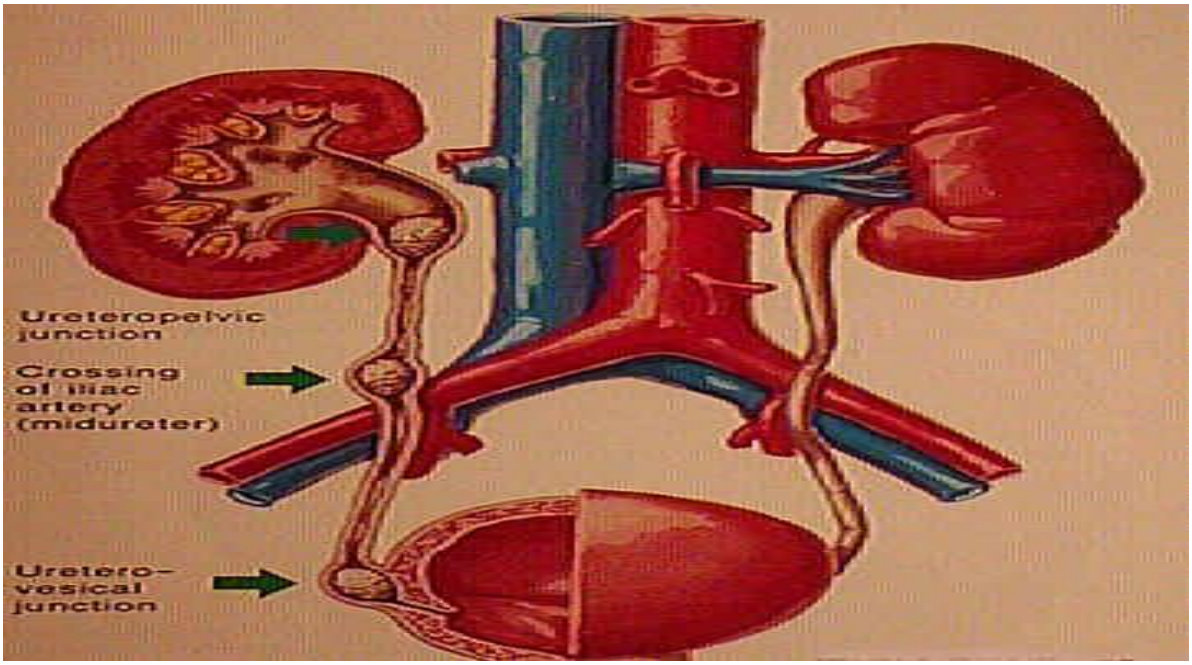
URINARY BLADDER RELATIONS IN BOTH SEXES





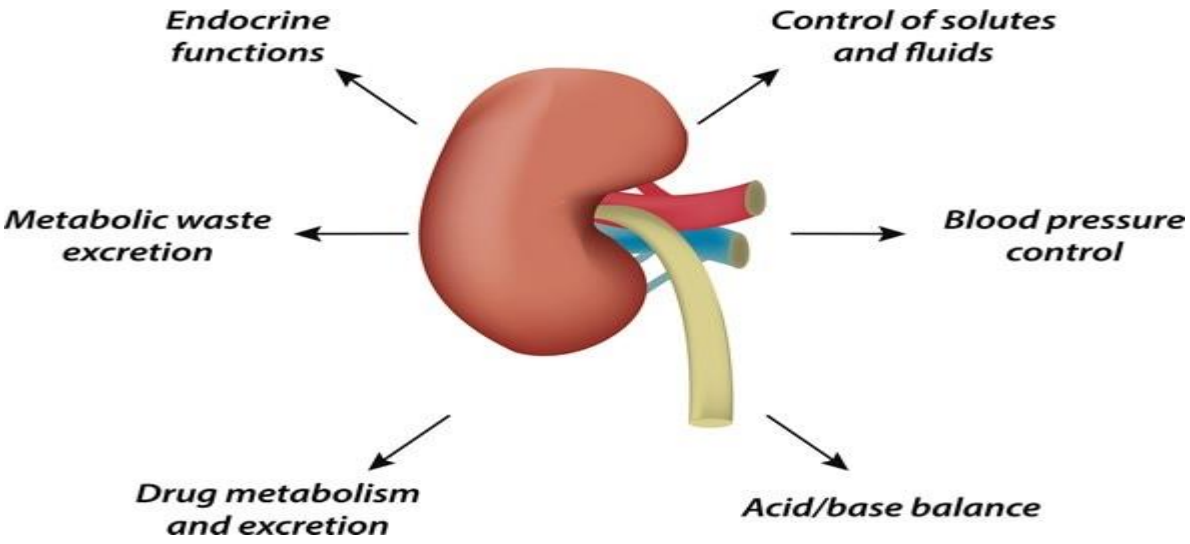
The three common sites of stone impaction in the ureters (normal narrowing) are:

- Pelvic-ureteric junction (PUJ)
- Where the ureters cross the iliac vessels
- Ureterovesical junction (UVJ) which is the narrowest part.



FUNCTIONS

1. Excretion of metabolic end products.
2. Control body fluid constituent's concentration.
3. Control acid base balance.
4. Hormone and enzyme.



Symptomatology

- The basic approach to the patient in urology is still dependent on taking a complete History, executing a thorough Physical Examination, and performing a Urinalysis.
- A complete history can be divided into three major components:
    1. The chief complaint.
    2. History of the present illness.
    3. Past history.

1. Pain

- Main causes of Genitourinary-related pain?

1. **Obstruction** :(stones, Acute Urine Retention (AUR) , tumors, etc).
2. **Inflammation**: pyelonephritis, prostatitis, epididymitis (pain is from distension of capsule surrounding organ).
3. **Postoperative.**

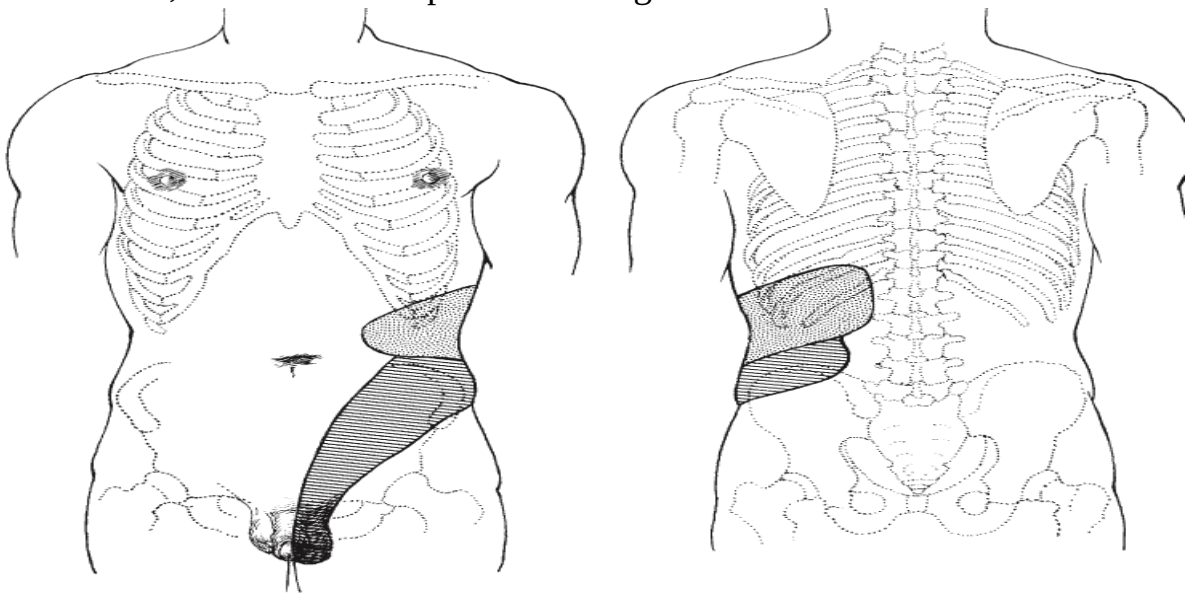
- ❖ Pain is from distension of capsule surrounding organ
- ❖ Not all obstruction is painful, especially when chronic.
- ❖ Mediated by Prostaglandins.

A. Renal Pain:

- Pain is usually caused by acute distention of the renal capsule, generally from inflammation, or obstruction of minor calyx or PUJ by a stone.
- Pain due to inflammation is usually steady Dull aching at the renal angle radiate to the relevant hypochondrium usually associated with fever and general ill health. e.g.: Pyelonephritis, pyonephrosis, and renal abscess.
- Pain due to obstruction is **colicky** &**fluctuates** in intensity.
- Pain **not** changed with movement.
- Pain of renal origin may be associated with gastrointestinal symptoms like **nausea & vomiting** (**GI symptoms from stimulation of celiac ganglion**).

B. Ureteral Pain (Ureteric Colic):

- **Sudden severe agonizing pain**, started at the loin, **radiates** to the ipsilateral iliac fossa, suprapubic region, and genitalia
- Associated with **nausea, vomiting**, and **urinary symptoms** like hematuria or dysuria.
- The patient is **rolling around**. (Contrast this with the patient suffering from peritoneal pain, who lies still to avoid exacerbating the pain by movement).
- It is ischemic pain
- Usually due to acute ureteral obstruction either by stone, clot, crystals, sloughed tissue or papillae.
- The site of ureteral obstruction can often be determined by the location of the referred pain. If the cause in the lower ureter the pain radiates to the testicle, labia or inner aspect of the thigh.



Referred pain from kidney (dotted areas) and ureter (shaded areas).

C. Vesical Pain:

- Suprapubic pain aggravated by vesical filling, relieved by urination.
- Produced either by overdistention of the bladder because of acute urinary retention or by Bladder inflammation (cystitis).

D. Prostatic pain:

- Usually secondary to inflammation (Prostatitis) with secondary edema and distention of the prostatic capsule.
- Usually poorly localized pain felt deep in the rectum, penis, pelvis perineum, suprapubic, low backache, & both iliac fossae.
- Often associated with Lower Urinary Tract Symptoms (LUTS).

E. Urethral pain:

- often referred from distal ureter, bladder, Prostate, urethra.
- Burning in nature usually at the tip of the penis but sometimes at its base, usually due to urethritis, cystitis or vesical or urethral calculus.

F. Penile pain :local pain can be from :

- paraphimosis.
- Priapism: prolonged, unwanted erection, in the absence of sexual desire or stimulus, lasting >4h.,
- Peyronie's disease : acquired benign penile condition characterized by deformity of the penile shaft secondary to the formation of a fibrous inelastic scar on the

G. Testicular Pain:

- Primary pain arises from within the scrotum and most commonly secondary to acute epididymo-orchitis or torsion of the testicle or testicular appendices or trauma.
- Because the testicles arise embryologically in close proximity to the kidneys, pain arising in the kidneys or retroperitoneum may be referred to the testicles. Similarly, the dull pain associated with an inguinal hernia may be referred to the scrotum.
- Testicular pain may by referred to the epigastric region.

2. Haematuria

- The presence of blood in the urine > 3 RBC /HPF is significant.
- Hematuria of any degree should never be ignored and, in adults, should be regarded as a feature of urologic malignancy until proved otherwise.
- The most common cause of gross hematuria in a patient older than age 50 years is bladder cancer.

Important points about haematuria

1. Gross or microscopical?
2. Timing of hematuria: Initial, terminal or total?
3. Painless or painful.?
4. Intermittent or persistent?
5. If the patient is passing clots, do the clots have a specific shape (thread like > ureteric or renal origin).

Causes:

1. Local cause like stone, Infection, Inflammation, Trauma, Tumor.
2. Systemic cause like bleeding tendency

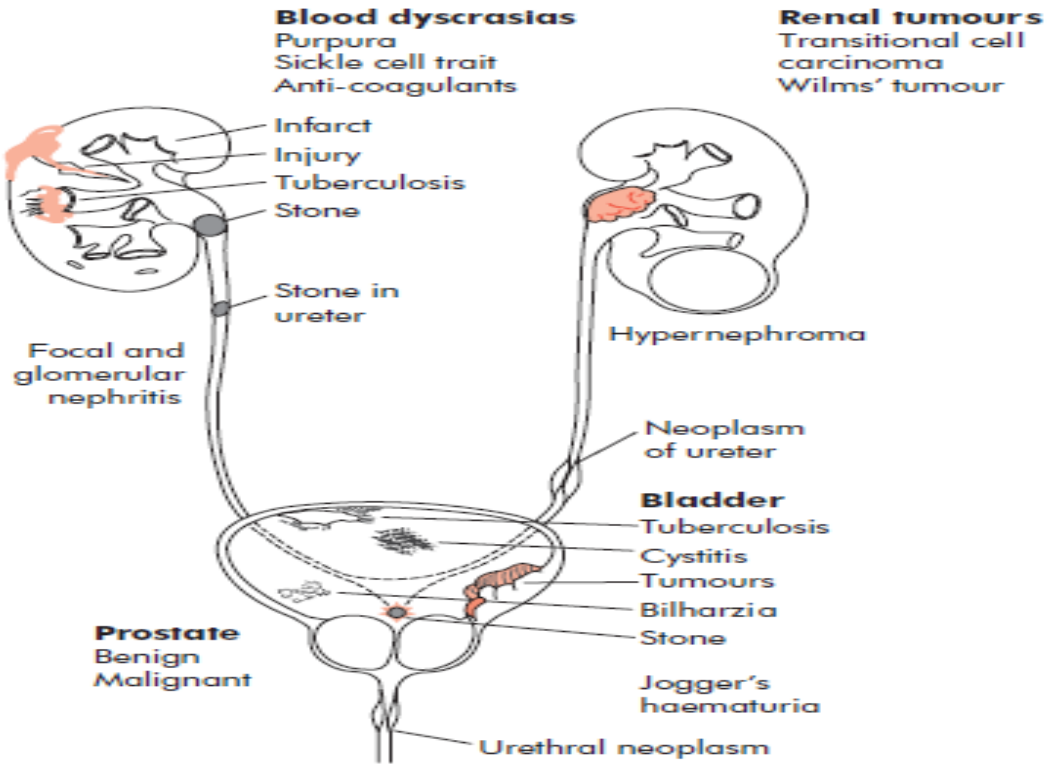


Figure 70.1 The more common causes of haematuria.

3. Lower Urinary Tract Symptoms (LUTS):

1. **Storage**: frequency, urgency, nocturia
2. **Voiding:** weak stream, PV dribbling, intermittency, hesitancy, straining, incomplete emptying, dysuria

A. Irritative Symptoms

1. **Frequency:** Increase in the number or times of urination(>7 voids during the day).
   - The normal bladder capacity is about 400-500mL
   - The normal adult voids 5-6 times per day, with a volume of approximately 300mL with each void.
   - Urinary frequency is due either to increased urinary output (polyuria) or to decreased bladder capacity.

   Causes:
   1. Systemic: compulsive water drinking, DM, DI or diuretics use.
   2. Local: stone, infection, BPH or prostatic carcinoma.
2. **Nocturia:** nocturnal frequency, complaint of having to wake at night ≥ 2 times to void).
3. **Dysuria:** painful urination (burning sensation) that is usually caused by inflammation of the bladder, urethra, or prostate. At times, the pain is described as "burning" on urination and is usually located in the distal urethra in men. Women usually localize the pain to the urethra. The pain is present only with voiding and disappears soon after micturition is completed. Dysuria often is the first symptom suggesting urinary infection and is often associated with urinary frequency and urgency.
4. **Urgency:** sudden strong desire to urinate that the patient cannot postpone it. caused by hyperactivity and irritability of the bladder, resulting from obstruction, inflammation, or neuropathic bladder disease.

B. Obstructive Symptoms

1. **Weak stream**: decreased force (flow) of urination.
2. **Urinary Hesitancy**: a delay in the starting (initiation) of micturition, is one of the early symptoms of bladder outlet obstruction. As the degree of obstruction increases, hesitancy is prolonged, and the patient often strains to force urine through the obstruction. Prostate obstruction and urethral stricture are common causes of this symptom.

3. **Intermittency**: involuntary start-stopping of the urinary stream (interrupted urinary stream).

4. **Postvoid dribbling** : the terminal release of drops of urine at the end of micturition
5. **Straining**: use of abdominal musculature to urinate.
6. **Feeling of Incomplete bladder evacuation**.

- **Retention of urine:** Inability to pass urine despite a full bladder (due to outlet obstruction OR a contractile bladder). Acute & chronic
- **Anuria**: complete absence of urine production.
- **Oliguria** is present when less than 0.5 ml/h of urine is excreted in a day. Oliguria and anuria may be caused by acute renal failure (due to shock or dehydration), fluid-ion imbalance, or bilateral ureteral obstruction.

- **Incontinence**: Involuntary loss of urine or Inability to control urination.
  1. Continuous incontinence.
  2. Stress incontinence.
  3. Urgency incontinence.
  4. Mixed incontinence
  5. Overflow urinary incontinence
- **Nocturnal Enuresis**:
  - Bed wetting (urinary incontinence that occurs during sleep), Physiological during first 2-3 yrs. of age, it may be functional or secondary to delayed neuromuscular maturation of the urethra-vesical component, but it may present as a symptom of organic disease (eg, infection, distal urethral stenosis in girls, posterior urethral valves in boys, neurogenic bladder).
  - If wetting occurs also during the daytime, however, or if there are other urinary symptoms, urologic investigation is essential.

4. Urethral Discharge:

- Urethral discharge in men is one of the most common urologic complaints.
- The causative organism is usually *Neisseria gonorrhoeae* or *Chlamydia trachomatis.*
- The discharge is often accompanied by local burning on urination or an itching sensation in the urethra

5. Hematospermia

- ✓ almost always from nonspecific inflammation of the prostate and/or Seminal vesicles.
- ✓ resolves spontaneously within several weeks
- ✓ no further work-up required, unless persists > several weeks
- ✓ rule out genital TB, Prostatic Ca } physical exam, DRE, PSA, urine cytology.

- **Pyuria:** presence of pus (WBC) in the urine.
- **Chyluria:** presence of lymph in the urine.
- **Phosphaturia**: presence of phosphate crystals in the urine.
- **Necroturia**: presence of necrotic tissue in the urine as in malignancy.
- **Pneumaturia**: presence of air in the urine.
  1. Recent instrumentation
  2. Fistula (Hx of diverticulitis, IBD, sigmoid Cancer).
  3. Infections in DM (fermentation of high sugar in urine).

Some medications with common urological side effects:

- Decreased libido and Erectile Dysfunction:
  1. Anti-HT (Hydrochlorothiazide, propranolol)
  2. Psychiatric meds (SSRIs, benzodiazepine).
- Anejaculation
  1. a-blockers (tamsulosin)
- Incontinence or impaired voiding
  1. smooth muscle relaxants: a-blockers eg prazosin, tamsulosin
  2. striated muscle relaxants : diazepam
- Acute urinary retention:

  ⇒ Impaired bladder contraction:
  1. Anticholinergics (oxybutynin).
  2. CCBs (nifedipine, amlodipine).

  ⇒ Increase bladder outlet resistant:
  1. A-agonists: (pseudoephedrine, phenylephrine).
  2. Antihistamines(loratadine, diphenhydramine).
- Acute kidney injury:
  1. Antibiotics : (aminoglycosides, penicillin, cephalosporins).
  2. Chemotherapy (cisplatin)
  3. NSAIDs
  4. ACEi

Thank You
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