



Chapter 99 – Urological Disorders

Episode Overview

Urinary Tract Infections in Adults

1. Differentiate between the three major causes of dysuria in women? (ddx of dysuria)
2. List 3 common UTI pathogens, and list 3 additional pathogens in complicated UTIs
3. Define uncomplicated UTI and antibiotic options
4. Define complicated UTI and antibiotic options
5. List two antibiotic options for uncomplicated and complicated pyelonephritis.
6. How is pyelonephritis managed in pregnancy? What are safe antibiotic options for bacteriuria in pregnancy?

Prostatitis

1. Describe the diagnosis and management of prostatitis

Renal Calculi

1. Name the areas of narrowing in the ureter
2. Name 6 risk factors for urolithiasis
3. List 8 alternative diagnoses (other than renal colic) for pain associated with urolithiasis
4. What are indications for hospitalization of patients with urolithiasis

Bladder (Vesical) Calculi

1. Describe this condition and its management

Acute Scrotal Pain

1. List causes of acute scrotal swelling by age groups (infant, child, adolescent, adult)
2. Describe the physiology, diagnosis and management of testicular torsion
3. Describe the treatment for sexually vs. non-sexually acquired epididymitis

Acute Urinary Retention

1. Describe the physiology of urination
2. List 10 causes of acute urinary retention in adults
3. List 6 causes of urinary retention in women

Hematuria

1. List causes of red-coloured urine without hematuria
2. List risk factors for urinary tract malignancy

Wisecracks:

1. When is a urine culture indicated (box 89.1)
2. What is a CAUTI and how is it managed?
3. What are two medication classes of drugs for prostatic enlargement?
4. Describe the testicular salvage rates (Fig. 89.9)
5. Differentiate between testicular torsion, appendicular torsion, and epididymitis (Table 89.9)
6. What are the causes of different urine colour pigmentation?



Rosen's in Perspective

Here's what we're covering in this episode! A huge range of topics - very clinically relevant for every-day practice! We'll cover some salient Rosen's in Perspective for each topic as we get to it!

- **UTI's in Adults**
- **Prostatitis**
- **Renal Calculi**
- **Bladder (Vesical) Calculi**
- **Acute Scrotal Pain**
- **Acute Urinary Retention**
- **Hematuria**

UTI's in Adults

- Most frequent bacterial infection in adults, one of the most common causes of sepsis
- Diagnosis is made by:
 - Urinary specific symptoms (dysuria, frequency, urgency, hematuria, suprapubic/CVA discomfort)
 - Bacteriuria (note this alone does not equal UTI! - unless patient is pregnant or immunocompromised)
 - No other source of infection
- Classified as:
 - Lower (bladder only) vs. upper (ureters and kidney)
 - Uncomplicated or complicated
- How is UTI diagnosed? What are the typical laboratory criteria for the various types of samples?
 - A clean catch midstream urine (unlike the first-void we do for NAAT's in STIs)
 - Epithelial cells = contamination
 - Diagnostic tests on dipstick suggestive of UTI:
 - Leukocyte esterase = enzyme found in neutrophils
 - Nitrites = produced from *gram negative bacteria*
 - ***so gram positive uropathogens such as S. saprophyticus and enterococcus will be nitrite negative!***
 - Microscopic hematuria
 - We cannot "rule out a UTI" even with a negative dipstick, unless you have a low pretest probability
 - Urine microscopy helps identify pyuria = > 10 WBC/mm³ or bacteria in the urine
 - IDSA says a positive urine culture is: $> 10^5$ CFUs/ml = **95% likelihood of infection** assuming the patient is symptomatic



1. Differentiate between the three major causes of dysuria? (ddx of dysuria)

Cause	Urethritis / UTI	Vaginitis	STIs Gonorrhea, chlamydia, trichomonas, HSV, NGU	Mechanical trauma	Irritation
Clinical features	Presence of pyuria Presence of hematuria (50% of patients)	Vaginal discharge Vaginal odor Pruritus	Men with urinary complaints Vaginal discharge		
Med Hx	Internal dysuria Frequency, urgency, voiding small volumes Abrupt onset Suprapubic pain Often associated with diaphragm use	External dysuria Gradual onset	Internal dysuria Occasional history of frequency, urgency, voiding small volumes Gradual onset Multiple partners Recent change in partners Partner with discharge or dysuria	Calculi Chemical or radiation Psychogenic / sexual instrumentation	Neoplasm Topical creams, lotions, underwear

2. List 3 common UTI pathogens, and list 3 additional pathogens in complicated UTIs

Common causes

- E. Coli - 75% or more
- Staph. Saprophyticus
- Klebsiella pneumonia
- Proteus mirabilis

Complicated, unusual causes:

- ESBLs (extended-spectrum β -lactamases)
 - E. coli
 - Klebsiella
- Pseudomonas
- Serratia
- Citrobacter
- Salmonella / Shigella
- Mycobacterium tuberculosis

3. Define uncomplicated UTI and antibiotic options

- Nonpregnant patient, with a *structurally and functionally normal urinary tract*



- Antibiotics:
 - Septra 160/800 mg BID for three days
 - Nitrofurantoin 100 mg BID for 5 days
 - Fosfomycin 3 g po x 1 dose
- Avoiding agents with >20% local resistance to antibiotics

If you're unsure if a patient has a UTI or an STI you can treat both with:

- Levofloxacin 500 mg po daily for 7 days
- Ceftriaxone 250 mg IM x 1

4. Define complicated UTI and antibiotic options

- A heterogeneous term that includes any of the following:
 - *Any structural or functional abnormality of the urinary tract*
 - *History of urinary instrumentation or organ transplant*
 - *Systemic disease (diabetes, renal insufficiency, immunodeficiency)*
 - *Men* (due to high risk for urologic abnormality)
- Lippism: "Anatomy, instrumentation, transplant"
 - S, P, E, C, I, A, L
 - Systemic disease
 - Pregnancy
 - Elderly
 - Compromised renal function or immune function
 - Instrumentation
 - Anatomy
 - Long urethra (males)
- These require a longer course of abx (similar to uncomplicated pyelonephritis)
 - Patients with complicated cystitis who can tolerate oral therapy:
 - oral fluoroquinolone such as ciprofloxacin (500 mg orally twice daily or 1000 mg extended release once daily) or levofloxacin (750 mg orally once daily) for five to seven days.
 - Trimethoprim-sulfamethoxazole 160/800 mg bid 10–14 days
 - Nausea, vomiting, anorexia, hypersensitivity reactions
- Should consider whether these folks need imaging (US vs. CT - most sensitive):
 - Imaging is reserved for:
 - Suspected urolithiasis, abscess, emphysematous pyelonephritis, severe or worsening symptoms despite >48 hrs of treatment

5. List two antibiotic options for uncomplicated and complicated pyelonephritis.

- Pyelonephritis = UTI involving the renal collecting system or parenchyma
 - Fever, chills, flank pain, CVA tenderness, N/V, +/- cystitis
 - In the elderly: altered mental status, lethargy, abdominal pain, generalized weakness

Uncomplicated (same treatment as complicated UTI)

- Ciprofloxacin 500 mg bid 7 days
 - GI disturbance, headache, dizziness, tremors, restlessness, confusion, rash, Candida infections



- Levofloxacin 750 mg once daily 5 days
 - Same as for ciprofloxacin
- Trimethoprim-sulfamethoxazole 160/800 mg bid 10–14 days
 - Nausea, vomiting, anorexia, hypersensitivity reactions
- In places with >10% fluoroquinolone resistance: give 1 g ceftriaxone followed by 10–14 days of an oral cephalosporin

Complicated

- Cefepime 1–2 g every 12 hours
 - Abdominal pain, muscle cramps, nausea, vomiting
- Ceftriaxone 1 g every 24 hours
 - Fever, cough, sore throat, fatigue
- Piperacillin-tazobactam 3.375 g every 6 hours
 - Diarrhea, nausea, vomiting, rash
- Aztreonam 1 g every 8–12 hours
 - Cough, abdominal pain, nausea, vomiting
- Ciprofloxacin 400 mg every 12 hours
 - GI disturbance, headache, dizziness, tremors, restlessness, confusion, rash, Candida infections
- Levofloxacin 500 mg every 24 hours
 - Same as for ciprofloxacin

6. What are safe antibiotic options for bacteriuria in pregnancy? How is pyelonephritis managed in pregnancy?

A couple key points about the pregnant patient with a UTI:

- Bacteriuria in pregnancy - gets treated even if the patient is asymptomatic
- If the patient is in the third trimester, they need hospitalization according to Rosen's.
- If the patient has pyelonephritis, they may need hospitalization (we can't use our standard PO outpatient drugs)
- NO fluoroquinolones
- CAREFUL when prescribing nitrofurantoin and tmp-sulfa

Bacteriuria:

- Amoxicillin-clavulanate 500 mg tid 3–7 days
- Cefpodoxime 100 mg bid 3–7 days
- Nitrofurantoin 100 mg bid 5–7 days
 - Contraindicated First trimester and 38 weeks to delivery
- Fosfomycin 3 g as a single dose
- Trimethoprim-sulfamethoxazole 160/800 mg bid 3 days
 - Contraindicated: First trimester and term

Pyelonephritis:

- Ceftriaxone 1 g every 24 hours
- Cefepime 1 g every 12 hours
- Piperacillin-tazobactam 3.375 g every 6 hours
- Aztreonam 1 gram every 8–12 hours



Prostatitis

- More than 90% of men with febrile UTI's have prostate involvement
- Prostatitis is a catch-all term that includes:
 - Acute bacterial prostatitis
 - Men 20-40;>60 yrs. Due to reflux of infected urine
 - Chronic bacterial prostatitis
 - Infection > 3 months
 - Develops in 10% of people with ABP
 - Chronic pelvic pain syndrome
 - Complex pain syndrome with urinary symptoms and sexual dysfunction and no organic etiology
 - Asymptomatic inflammatory prostatitis

1. Describe the diagnosis and management of prostatitis

- Acute bacterial prostatitis: **clinical diagnosis**
 - UTI symptoms, fevers, chills, dysuria, frequency, urgency, *perineal or low back pain*
 - Tender and swollen prostate on rectal exam
 - Urine culture, blood cultures if febrile, and STI testing
 - At risk for urinary retention and prostatic abscess
 - Management:
 - Bed rest
 - Analgesia
 - Hydration
 - Stool softeners
 - Alpha blockers - if there are obstructive voiding sxt
 - Antibiotics
 - Fluoroquinolones are some of the few abx that actually penetrate the prostate - they are the mainstay of treatment
 - Cipro
 - Levoflx
 - Septra and ceftriaxone are alternatives where resistance exists
 - Duration: 4-6 weeks
- Chronic bacterial prostatitis
 - Similar hx symptoms, often normal exam, with positive urine cultures (require a special protocol)
 - Treatment with:
 - Alpha-adrenergic blockers
 - Cipro or Levofloxacin for up to 12 weeks.



Renal Calculi

- Stones are a common problem with a 50% recurrence rate
- The composition is:
 - Calcium (75% of stones)
 - **hypersecretion of calcium is a major contributor to stone formation**
 - Note hyperparathyroidism, hypercalcemia of malignancy, sarcoidosis, ingestion or absorption from the gut
 - Calcium oxalate stones:
 - Hyperoxaluria
 - Small bowel disease, bariatric sx, crohn's disease, UC, radiation enteritis
 - Struvite stones (Magnesium, ammonium, phosphate) - 15%
 - Occur exclusively in patients with **UTIs** because they require bacteria to split urea into precipitates
 - Uric acid stones - 10%
 - Occur in people with gout
- 20% of patients with urolithiasis have NO microscopic hematuria
- Imaging with CT KUB vs. U/S is recommended only if:
 - First presentation of disease
 - Do not improve with initial treatment
 - Have a urinalysis suspicious for infection
 - Have a solitary/transplanted kidney
 - Diagnostic uncertainty
- Complete ureteric obstruction leads to irreversible damage after 1-2 weeks and risk for pyelonephritis, perinephric abscess, and gram -ve sepsis.

1. Name the areas of narrowing in the ureter

Stone passage and need for surgical intervention depends on:

[1] Calculus size

Stone size	Pass rate (%) by 4 wks
< 5mm	90%
5-8 mm	15%
> 8 mm	5%

[2] Location

There are five areas of narrowing along the ureter - fig 89.4

1. **Calyx of the kidney**
2. **Ureteropelvic junction (UPJ)**
3. **Uretero-pelvic brim** (ureter arches over iliac vessels posteriorly into the true pelvis)



4. **Ureterovesicular junction (UVJ)** this is the most common site of obstruction. This is where the ureter enters the muscular coat of the bladder
5. **Vesical orifice**

Degree of patient pain

- This factor usually determines whether a patient can tolerate outpatient treatment options, pain control and remain hydrated.

2. Name 6 risk factors for urolithiasis

See box 89-2

Metabolic disease or disturbance

- Crohn's disease
- Milk-alkali syndrome
- Primary hyperparathyroidism
- Hybernatriuria
- Hyperuricosuria
- Sarcoidosis
- Recurrent UTI
- Renal tubular acidosis (type I)
- Gout
- Laxative abuse

Positive family history

Hot arid climates (southeast United States)

Male gender (white men affected more commonly than black men)

Previous kidney stone

Dehydration

Any tricks for remember this list?

DRY ROCKS

- Dehydration / hot climates / acidosis
- Recurrent UTI
- Y chromosome
- Relatives with stones
- Odd habits (milk-alkali, laxative abuse, calcium ingestion)
- Calcium diseases (primary hyperparathyroidism, malignancy, sarcoid)
- Kidney stones
- Small bowel diseases (Crohns)

3. **List 8 alternative diagnoses (other than renal colic) for pain associated with urolithiasis**

Random list

1. AAA rupture / dissection
2. Ectopic pregnancy



- a. Ovarian cyst
- 3. Bowel obstruction
- 4. Incarcerated inguinal hernia
- 5. Pancreatitis
- 6. Cholecystitis
- 7. Renal infarction, thrombosis, malignancy
- 8. PE
- 9. Appendicitis

Organized list, but not in order of life threats:

- 1. Urologic disease
 - a. Upper urinary tract
 - i. Renal infarct
 - ii. Renal tumour
 - iii. Pyelonephritis
 - b. Ureter
 - i. Tumor
 - ii. Stricture / hemorrhage
 - c. Lower urinary tract
 - i. Tumour
 - ii. Urinary retention
- 2. Non-urologic disease
 - a. Intraabdominal
 - i. Peritonitis
 - ii. Biliary colic
 - iii. Bowel obstruction
 - b. Vascular
 - i. AAA
 - ii. SMA occlusion
 - c. Retroperitoneal
 - i. Tumour
 - ii. Pancreatitis
 - iii. Fibrosis
 - d. Gynecologic
 - i. Ectopic pregnancy
 - ii. Ovarian torsion
 - iii. Ovarian cyst
 - iv. Cerv. cancer, endometriosis, ovarian vein syndrome
 - e. MSK
 - i. Strain / fracture

4. What are indications for hospitalization of patients with urolithiasis

The key stones of management:

- NSAIDS (decrease pain, decrease ureterospasm, and renal capsular pressure by dropping GRF to the obstructed kidney)
- Fentanyl prn
- ondansetron prn



- Fluids (although no evidence for this)

What is medical expulsive therapy? When can it be used?

- **Useful for distal ureteral stones** less than 10 mm.
 - Alpha1-antagonists
 - Tamsulosin 0.4 mg po daily
 - OR
 - Calcium channel blockers
 - Nifedipine xr 30 mg po daily
- Thought to facilitate distal stone expulsion, decrease time to stone passage, and block ureteral smooth muscle contraction
- More evidence for alpha blockers, but there are notable side effects
- Alpha blockers recommended by EUA and AUA.

Indications for hospitalization:

- Stone factors
 - Urolithiasis with suspicion for UTI or sepsis
- Patient factors
 - Dehydration, recalcitrant pain, vomiting
- Blowup factors
 - Urinary extravasation
 - Hypercalcemic crisis

Copied from Rosen's box 89.4

Indications for Hospitalization of Patients

With Urolithiasis

ABSOLUTE

- Obstructing stone with signs of urinary infection
- Intractable nausea or vomiting
- Severe pain requiring parenteral analgesics
- Urinary extravasation
- Hypercalcemic crisis

RELATIVE

- Significant comorbid illness complicating outpatient management
- High-grade obstruction
- Leukocytosis
- Solitary kidney or intrinsic renal disease
- Psychosocial factors adversely affecting home management

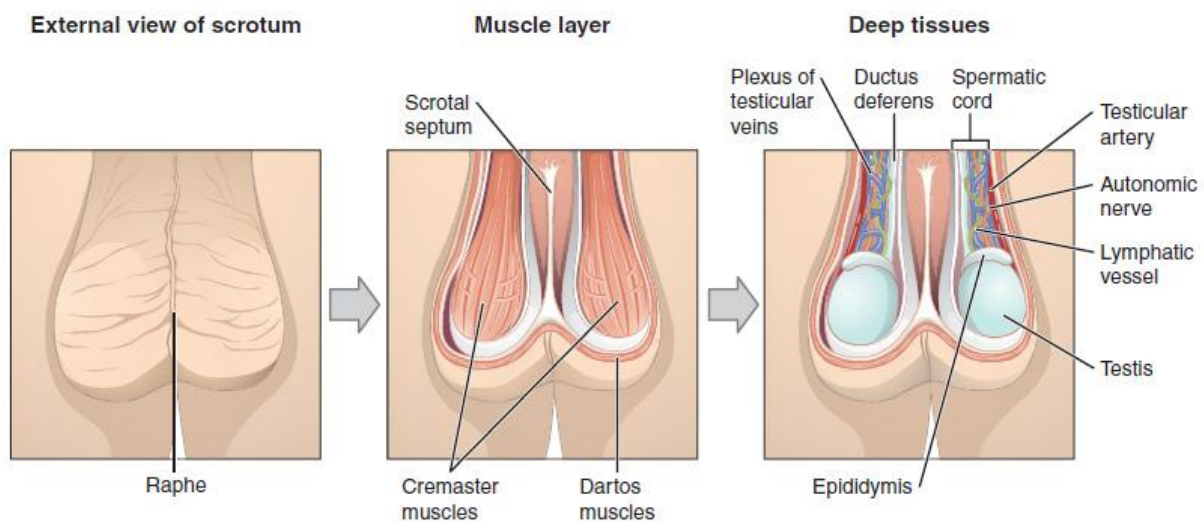
Bladder (Vesical) Calculi

1. Describe this condition and its management

- <5% of calculi
- Usually in older men with infected residual bladder urine with urea splitting organisms (Struvite stones!)
- Causes:
 - Indwelling catheter
 - BPH
 - Neurogenic bladder
 - Irradiation
 - Schistosomiasis
- Urinary symptoms, with sudden obstruction of the bladder outlet
- Usually need surgical removal after U/S or CT dx

Acute Scrotal Pain

- Know your anatomy



- Know that the left testis normally sits lower than the right
- They normally sit in the vertical axis
- “The epididymis is located posterolateral to the testis and is normally nontender and soft. The cremasteric reflex is elicited by stroking or pinching the inner aspect of the thigh; more than 0.5 cm of elevation of the ipsilateral testicle is considered evidence of a normal reflex. **This reflex normally is absent in 50% of male infants younger than 30 months.**”



1. List causes of acute scrotal swelling by age groups (infant, child, adolescent, adult)

Infant	Child	Adolescent	Adult
Hernia Hydrocele	Hernia Torsion Epididymitis	Epididymitis Torsion Trauma	Epididymitis Hernia Trauma Tumor Torsion Fournier's gangrene

2. Describe the physiology, diagnosis and management of testicular torsion

- Bimodal onset: <1 yr and at puberty
- 40% of cases occur in adults
- More often occurring in the winter when the cold temperature induces contraction of the cremasteric muscles
- Torsion occurs where there is a congenital defect of the testis → predisposing to testicular rotation when the cremaster muscle contracts. → then the spermatic cord twists cutting off blood flow. Usually there is the bell clapper deformity.
- Dx:
 - History: unreliable!
 - Sudden onset - during sleep or post activity
 - In one study $\frac{3}{4}$ of patients presented more than 12 hrs after the onset of pain
 - Often N/V or abdominal pain
 - 10% may have no stated scrotal pain
 - Physical:
 - Absent cremasteric reflex favours testicular torsion (but its presence can't rule out torsion)
 - Tender, firm testicle
 - Shortening of the spermatic cord
 - Transverse lying position, with the epididymis off the posterior axis
 - ***these findings may be absent after 24 hrs of sxt***
 - U/S: ask for color doppler duplex ultrasound of both testicles and spermatic cords
 - Findings of TT:
 - Enlarged, hypoechoic testicle
 - False negatives with:
 - Early in the course of the disease, intermittent torsion
 - Think about the ddx
 - Torsion of the testicular appendage
 - Epididymitis
- Management:
 - Consult urology ASAP (even if U/S is negative if you have a high pre-test probability for TT)



- Attempt manual detorsion if no immediate urologist available
- Analgesia and antiemetics

3. Describe the treatment for sexually vs. non-sexually acquired epididymitis

Epididymitis: Think STI vs. urinary tract abnormality

- Most common intrascrotal inflammatory disease, usually occurs with orchitis.
- Infection usually extends from urethra (STIs) or from bladder (UTI)
- All men are at risk for this disease, but commonly it is from Chlamydia and Gonorrhoeae especially in men < 35
 - < 10% of these patients have associated urethritis or urethral discharge
- Insertive anal sex also puts men at risk for enteric organisms
- Older men are at risk for UTI pathogens with abnormal urinary tracts (SPECIAL) and BPH
- Both groups usually present with gradual onset lower abdominal pain then scrotal pain progressing to scrotal edema, erythema, tenderness.
- No clinical way to differentiate epididymitis from testicular torsion (get that ultrasound and ask them to rule out “spermatic cord twisting”)

Management

- **STI related**
 - **Ceftriaxone 250 mg IM x 1**
 - **Doxycycline 100 mg po bid x 10-14 days**
- **Enteric organism related**
 - **Levofloxacin 500 mg po daily for 10 days**
- **Pre-puberty**
 - **Supportive care, wait for positive urine culture before administering abx**
- Supportive care:
 - Bed rest,
 - Scrotal elevation
 - Analgesia
 - Ice packs

Things we didn't have time to cover:

- Orchitis (mumps: parotitis→ orchitis)
- Testicular tumours
- Testicular trauma including rupture
- Hydroceles, varicoceles, spermatoceles



Acute Urinary Retention

- Risk of AUR increases with age

1. Describe the physiology of urination

- Coordinated contraction of the detrusor muscle (parasympathetic innervation and Beta adrenergic inhibition) and relaxation of the bladder neck and internal sphincter by alpha adrenergic inhibition.
- AUR:
 - “AUR results from a disruption of this coordinated physiology caused by
 - an increased resistance to flow via mechanical (eg, urethral stricture, clot retention) or dynamic means (eg, increased α -adrenergic
 - activity, prostatic inflammation) or decreased neurogenic control
 - of the detrusor muscle (eg, drugs inhibiting bladder contractility,
 - diabetes cystopathy).”

2. List 10 causes of acute urinary retention in adults

Ok, we're typically talking about male anatomy causing problems with this one:

1. BPH (by far the most common cause)
2. Urethral strictures (post trauma, infection, radiation, surgery)
3. Prostate cancer / penis cancer
4. Phimosis / paraphimosis
5. Acute prostatitis / urethritis
6. Pharmacology
 - a. Anticholinergics, sympathomimetics, CCBs, NSAIDs, TCAs, antihistamines
7. Neurogenic causes:
 - a. MS
 - b. Parkinson's
 - c. Diabetic peripheral neuropathy
 - d. Spinal trauma / shock
 - e. Strokes
 - f. Epidural abscess
 - g. Disk herniation
8. Infectious/inflammatory
 - a. Genital herpes
 - b. Herpes zoster

PROSTATE:

- Pharmacology that blocks the parasympathetics or increase alpha adrenergic tone
- Recent instrumentation
- O
- Strictures
- Tumours along the way
- Angry tissues (UTI's, urethritis)
- Trauma to the tract



- Epidural disease (neurogenic causes)

In the kids:

- Congenital posterior urethral valves
- UTI's

Usually leave an ED catheter in place for 3-7 days due to the 70% recurrence rate of AUR if it's immediately removed.

3. List 6 causes of urinary retention in women

1. Atonic bladder
2. Inflammation post-partum or herpes simplex virus
3. Bartholin's abscess
4. Acute urethritis or Vulvovaginitis
5. Pelvic masses
6. Pelvic organ prolapse (bladder, rectum, anus)

Hematuria

1. List causes of red-coloured urine without hematuria

Causes of Red-Colored Urine Without Hematuria

Phenazopyridine
Nitrofurantoin
Rifampin
Chloroquine
Hydroxychloroquine
Iodine
Bromide
Food coloring
Beets
Berries
Rhubarb

2. List risk factors for urinary tract malignancy

Risk Factors for Urinary Tract Malignancy

- Age > 35 yr
- Past or current cigarette smoking
- Occupational exposure (chemicals or dyes)
- Analgesic abuse
- Chronic indwelling foreign body
- Chronic urinary tract infection
- Exposure to known carcinogenic or chemotherapeutic agent



- Gross hematuria
- Irritative voiding symptoms
- Pelvic irradiation
- Urologic disorder or disease

Wisecracks:

1. When is a urine culture indicated (box 89.1)

- Pt. hx strongly suspicious for UTI, with a negative urine dipstick
- Pt. with treatment failure or symptoms lasting >4 days
- Recurrent UTI
- Complicated infection (see the SPECIAL mnemonic)
 - Systemic illness: Diabetes, sickle cell disease, cancer,
 - Pregnancy
 - Elderly at risk for bacteremia
 - ImmunoCompromised - alcoholism
 - Instrumentation - cystoscopy, catheter
 - Anatomic urologic anomalies or obstructions (stones/BPH)
 - Men
- Children
- Ill appearance suggestive of bacteremia or pyelonephritis
- Recent exposure to abx or on abx
- Recently hospitalized
- Hx of multi-drug resistant organisms

2. What is a CAUTI?

Catheter-associated urinary tract infections (UTIs) are a common healthcare-associated infection.

Bacteriuria occurs at a rate of approximately 3 to 10 percent per day of catheterization.

Defined as symptoms new onset or worsening: fever, rigors, AMS, malaise, lethargy, with no other identified cause; flank pain, costovertebral angle tenderness, acute hematuria; or pelvic discomfort) and more than 1000 CFU/mL of one or more bacterial species. Screening for or treating asymptomatic bacteriuria in patients with indwelling catheters is not indicated.

Treatment:

1. Remove the catheter - this usually spontaneously clears the bacteriuria
2. If it needs to stay in:
 - a. Urine culture and sensitivity
 - b. Treatment based on the C+S
 - c. Replacement of the catheter



3. What are two medication classes of drugs for prostatic enlargement?

ALPHA-ADRENERGIC RECEPTOR ANTAGONIST

Alfuzosin 10 mg once daily

Doxazosin 1 mg once daily

Tamsulosin 0.4 mg once daily

Terazosin 1 mg once daily or at bedtime

5-ALPHA-REDUCTASE INHIBITORS

Dutasteride 0.5 mg once daily

Finasteride 5 mg once daily

4. Describe the testicular salvage rates (Fig. 89.9)

Any delay beyond 6 hrs is associated with testicular loss and infertility (>60% after 6 hrs).

By 24 hrs there is a 50% salvage rate, and 50% of those salvaged have subsequent atrophy despite salvage!

5. Differentiate between testicular torsion, appendiceal torsion, and epididymitis (Table 89.9)

This is some space repetition!

Directly from Table 89.9 in Rosens 9th Edition
 Differentiation Among Common Causes of the Acute Scrotum

PARAMETER	TESTICULAR TORSION	APPENDIX TORSION	EPIDIDYMITIS
Age puberty	<1 yr, puberty	7–14 yr	Adult
Onset	Hours	1–2 days	Days to weeks
Location of pain	Entire testicle	Upper pole	Epididymis
Testicle position	High-riding testicle Transverse alignment	Normal position Vertical alignment	Normal position Vertical alignment
Systemic symptoms	Nausea, vomiting	None	Possibly fever
Cremasteric reflex	No	Intact	Intact
Pyuria	Rare	No	Yes



Ultrasound findings	Diffusely hypoechoic Asymmetric testicles Normal or decreased flow Spermatic cord twist	Focally hypoechoic Symmetrical testicles Normal flow	Hypoechoic epididymis Symmetric testicles Increased flow
Treatment	Surgery	Supportive	Antibiotics; prepubescent— supportive only

Wisecracks 6

What are the causes of different urine colour pigmentation?

Straight from Life in the fast lane [here](#)

Green	<p>Drugs: Cimetidine, Promethazine, Amitriptyline, Flutamide, Indomethacin, Methocarbamol, Methylene blue, Mitoxantrone, Propofol, Phenylbutazone, Triamterene</p> <p>Condition: Hartnup Disease, Indicanemia, Indicanuria</p> <p>Infection: Pseudomonas Infection</p> <p>Dyes: Carboic Acid, Flavine derivatives, Indigo Blue, Methylene Blue, Resorcinol</p> <p>Other: Clorets, Listerine, Magnesium Salicylate, Asparagus</p>
Orange	<p>Drugs: Idarubicin, Ferrioxamine, Oxamniquine, Phenazopyridine, Rifampicin, Sulfasalazine, Warfarin</p> <p>Food/supplements: Carotenes, B-complex vitamins, Senna, Rhubarb, Beets and blackberries</p> <p>Condition (hypercarotenemia): Diabetes mellitus, hyperlipidemia, hypothyroidism, porphyria</p>



<p>Red</p>	<p>Stones: (calculi in the renal pelvis, ureter or bladder)</p> <p>Malignancy— TCC, RCC, Wilms</p> <p>Trauma—blunt or penetrating trauma to the abdomen or pelvis; a catheter will commonly cause haematuria. BPH is a common cause of intermittent gross haematuria</p> <p>Renal: Primary renal disease (e.g. glomerulonephritis; including IgA-related, membranous, mesangiocapillary, focal and minimal change). Renal disease associated with / due to / secondary to systemic vasculitis (e.g. SLE, polyarteritis nodosa), Papillary necrosis secondary to analgesic nephropathy or diabetic nephrosclerosis. Hereditary (e.g. Alport's syndrome).</p> <p>Infection: Pyelonephritis, UTI, pyonephrosis, cystitis, prostatitis, TB, schistosomiasis</p> <p>Coagulopathy: Anticoagulation, Inherited defect (e.g. haemophilia, Von Willebrand's), Acquired defect (e.g. DIC, thrombocytopenia).</p>
<p>Red-Brown</p>	<p>Drugs: Levadopa, nitrofurantoin, metronidazole</p> <p>Condition: Rhabdomyolysis (myoglobinuria), bile pigment</p> <p>Other: Fava beans</p>
<p>Purple</p>	<p>Infection: Bacteria such as <i>Providencia stuartii</i>, <i>Klebsiella pneumoniae</i>, <i>P. aeruginosa</i>, <i>Escherichia coli</i>, and enterococcus species.</p> <p>Condition: Hartnup Disease, Indicanemia, Indicanuria</p>
<p>Black</p>	<p>Drugs: Stimulant laxatives (e.g. cascara, senna)</p> <p>Condition: Alkaptonuria, methemoglobinuria</p> <p>Other: Melanin</p>