URINARY TRACT INFECTIONS

most common bacterial infection in women

Lower Tract CYSTITIS

Catheter-Associated

most common hospital acquired infection

UTI in pt w/ indwelling urethral catheter >48hrs prior to sx

Prevention: only use cath when necessary, aseptic insertion, closed collection set, small diameter, not continuous

Uncomplicated

Sporadic, community-acquired

Complicated

immunocompromised, male, diabetes, pregnant, preadolescent, postmenopausal, GU abnormalities

- increased risk of infection or failure of therapy

Empiric abx → 7-10 days of appropriate abx

Acute

Risk Factors: previous cystitis, intercourse, diaphragm use

Symptoms: new onset dysuria, frequency/urgency, suprapubic discomfort, no vaginal discharge

Diagnosis: **Urine dipstick** initial test of choice.

- leukocyte esterase → pyuria
- nitrites → bacteruria

Urine microscopy - counting of leukocytes to measure pyuria.

>10 leuks/mm^3 = ≥10^5 bacteria

- symptomatic → 10^2-10^3 bacteria

Urine Culture - confirms presence of bacterial cystitis. Majority due to E.coli (gram⁻)

Subset: Uropathogenic (UPEC)

type 1 P binds mannose → cystitis; galactose → pyelonephritis

Treatment: ① nitrofurantoin 100mg bid x 5days

① trimethopim-sulfamethoxazole DS bid x 3 days

② fluoroquinolone (ciprofloxacin)

③ B-lactam (amox-clav)

Ancillary - urinary analgesics, Sitz baths, fluid

Treat constipation to prevent

Recurrent

most often due to re-infection rather than incomplete treatment

Treatment

- chronic low dose antibiotic prophylaxis x6-12 months
- post-coital prophylaxis
- d-mannose (e. coli)
- probiotics - femdophilus

Upper Tract PYELONEPHRITIS

infectious, inflammatory process involving kidney parenchyma and renal pelvis

Symptoms: flank pain, fever, chills, N/V, cystitis sx

- elderly/diabetic → no fever, mental status changes
- young → fever, abdominal pain

Physical Exam: tachy, fever, CVA tenderness

Diagnostics

CBC → leukocytosis

UA → pyuria, WBC casts ± hematuria, bacteriuria

Culture → **before** abx

Most commonly due to ascending infection from bladder

Imaging IF UT abnormality, hx of stones, sepsis, Symptoms >5 days before tx, persistant fever 72 hrs abx

Management

OUTPATIENT

- able to tolerate oral abx
- no indication for inpatient

↓

Fluoroquinolone x7d

TMP-SMX x14d

NEVER Nitrofurantoin

↳ poor tissue/blood supply

INPATIENT

- Severe infection with signs of sepsis
- Can't tolerate oral abx
- elderly
- Significant comorbidities
- signs of obstruction

↓

IV Fluoroquinolone

Aminoglycoside + ampicillin

Cefalosporin + aminoglycoside

↓

Oral abx based on culture

Asymptomatic bacteriuria: do NOT screen OR treat

- only treat w/ signs of infection or if pregnant or male

PROSTATITIS
Syndrome of pain, infection, and voiding symptoms in men

Type 1: acute bacterial
Etiology: usually gram⁻ rods - E.coli, Klebsiella, Proteus, Pseudomonas
Pathophys: compromised immunity ± refluxed urine ± contamination during intercourse
Symptoms: fever/chills, Pain (back, pelvic, perineal), LUTS (dysuria, frequency, retention)
PE: SICK, suprapubic tenderness, tender, boggy, enlarged prostate
Diagnostics: Voided urine. NO massage → sepsis
- ± CT → abscess

Treatment: IV/oral abx - Quinolones penetrate prostate
IF fever persists → consider abscess

Type 2: Chronic bacterial
NOT nearly as severe
Pathophys: prostate is reservoir of bacteria, and growth tends to cause symptom reoccurence
Symptoms: frequency, dysuria, urgency, pain. usually NO fever
Diagnosis: post massage urine culture or EPS
Treatment: quinolone or sulfa x4-6 weeks

Type 3 non-bacterial OR Prostatic/Pelvic Pain Syndrome
etiology unknown

Symptoms: Pain - pelvis, perineum, back, genitals, bladder, rectum
Void dysfunction - nocturia, dysuria, ↓stream, urgency
Sexual dysfunction - pain, erectile dysfunction
Diagnostics: 4 glass test, Check residual volume
Treatment: reassurance, lifestyle, expectation of relapse
medication - anti-inflammatories and alpha blockers

EPIDIDYMITIS
infection/inflammation of the epididymis

Causes
- Chlamydia or gonococcal - men<35 with exposure, recent sexual activity
- enteric gram⁻ - older men, hx of BPH, UTIs, or urethral stricture disease

Clinical: unilateral testicular Swelling w/ gradual, progressive onset of pain
Diagnosis
UA → pyuria, bacteriuria
Ultrasound → enlarged, hypervascular epididymis with normal or increased blood flow to the testis
+Prehn's Sign - relief w/ elevation

Treatment
Bacterial → antibiotics
- STI related: ceftriaxone + doxy daily x10 days
- STI (anal): ceftriaxone + cipro b.i.d x10 days
- >35: cipro b.i.d x 10-14 days ← or levoflox

Mumps → analgesics
Symptomatic → analgesics, NSAIDs, ice, elevate

ORCHITIS
infection/inflammation of the testicle

Causes: Commonly ascending infection from urinary tract
- occurs in 25% of post pubertal males with mumps

Clinical: unilateral testicular Swelling and pain. ± fever, tachy
Diagnosis
UA → pyuria, bacteriuria
Ultrasound → rule out mass, testicular torsion, abscess

Treatment
Bacterial → antibiotics
- STI related: ceftriaxone + doxy daily x10 days
- STI (anal): ceftriaxone + cipro b.i.d x10 days
- >35: cipro b.i.d x 10-14 days ↔ or levoflox

Mumps → analgesics
Symptomatic → analgesics, NSAIDs, ice, elevate

SEXUALLY TRANSMITTED INFECTIONS

CHLAMYDIA

epi: most common STI AND reported bacterial infection. W > M. Age = 18-26 yo

risk factors: young age (<25), new/multiple partners in prior 3 months, hx of chlamydia, inconsistent condom use

patho: infection of gram⁻ bacteria Chlamydia trachomatis

life cycle - metabolically inactive elementary bodies attach and penetrate into cells within 6-8hrs → in host, EB differentiate into active reticulate body → replicate → infect other cells

Clinical: symptoms of cervicitis, PID, urethritis, perihepatitis, rectal, conjunctivitis/pharyngitis

cervicitis → discharge, bleeding, pelvic pain, abdominal pain, chills

PID → N/V, fever, chills, low back pain, dyspareunia, post-coital bleeding

Urethritis → more common in men. Dysuria, pyuria.

PE → muco/purulent discharge and friability

- conjunctival cobblestoning or injection. Abdominal or pelvic tenderness

diagnosis: NAAT preferred via vaginal swab. Not routinely cultured.

treatment: Doxycycline 100 mg PO bid x 7 days. Alternatives - azithro (1g PO once) or levoflox (500mg x 7d)

Goals - prevent complicated infections, ↓transmission, sx relief, prevent reinfection

Indications for empiric tx → recent exposure, sx, high risk

counseling: med adherence. Abstinence until both partners treated

FU testing at 3months for ALL pts

"Test of cure" at 4 wks for some (pregnancy, persistant sx, nonadherence)

screening: Women <25 → annually. Pregnant → first tri. HIV+ → annually.

GONORRHEA

epi: 2nd most common. Peak: 20-24

risk factors: young age (<25), new/multiple partners in prior 3 months, hx of gonorrhea, inconsistent condom use, low SES, substance abuse

patho: gram⁻ intracellular diplococci

4 phases: attachment to mucosal cell surface, penetration/invasion, proliferation, local inflammatory response or systemic dissemination

Clinical: sx of cervicitis, PID, urethritis, perihepatitis, bartholinitis, conjunctivitis/pharyngitis

cervicitis → discharge, bleeding, pelvic pain, abdominal pain, chills

PID → N/V, fever, chills, low back pain, dyspareunia, post-coital bleeding

Urethritis → more common in men. Dysuria, pyuria.

Bartholinitis → enlargement, tenderness of gland

If disseminated then leads to purulent arthritis OR triad of tenosynovitis, dermatitis, and polyarthritis (when untreated)

PE → copious amount of muco/purulent discharge and friability

- conjunctival discharge, abdominal tenderness, joint pain

diagnosis: NAAT preferred via vaginal swab. Not routinely cultured.

treatment: cefriaxone 500 mg IM once. Alternatives - ceftriaxone 1g IM if >300 lbs

If antimicrobial resistance high dose azithro w/ gentamicin

Counseling and screening same as above

TRICHOMONIASIS

epi: risk factor - multiple partners

patho: trichomonas vaginalis infection transmitted via sexual intercourse

clinical: purulent, malodorous discharge, burning, pruritis, dysuria, frequency, dyspareunia
- PE → speculum exams w/ green-yellow discharge, "strawberry cervix"

diagnosis: culture for trichomoniasis gold standard
- In office → pH and microscopy (wet prep) → flagella
  - immediate dx/tx but less accuracy and doesn't evaluate cervicitis
- Lab testing → NAAT diagnostic accuracy but delayed diagnosis

treatment: metronidazole 2g PO once or 500mg PO bid x 7 days. Test of Cure 4-6 weeks
- alternative → tinidazole 2g PO once
  - no alcohol for 24hrs after metronidazole

GENITAL ULCERS

HSV

epi: HSV 1/2 both common and can cause genital warts
- risk factors: new/multiple partners, inconsistent condom use

patho: transmitted through direct contact of secretions in seropositive individual actively shedding virus. Symptoms last 10-14 days, but virus remains dormant in perixaxonal sheath of sensory nerves
- ↳ reactivation → virus travels from sensory nerves to mucocutaneous sites

clinical: painful genital ulcers, itching, dysuria, fever, tender local inguinal LAD, headache
- PE → grouped 2-4mm vesicles w/ underlying erythema (4 days after exposure)
  - progresses to vesicopustules, erosions, ulcerations

diagnosis: viral culture direct swab of vesicular lesions (ideally within 72 hrs)
- HSV PCR if direct swab not possible
- Tzank smear - low sensitivity

treatment: initially, acyclovir (400mg tid x 7-10d), famciclovir (250mg tid x 7-10d), valacyclovir (1g bid x 7-10d)
- recurrent → episodic self administered for outbreaks. Taken at first sign of prodromal sx
  - acyclovir (800mg tid x 2days), famciclovir (1g PO bid x 24hrs), valacyclovir (500mg bid x 3days)
  - chronic suppressive daily for pts w/ freqeuent/severe recurrence. ↓risk of activation
  - acyclovir (400mg bid) famciclovir (250mg PO bid) valacyclovir (500-1000mg qd)

CHANCROID

epi: Asia, Africa, Caribbean. Cofactor of HIV transmission

patho: caused by bacterium Haemophilus ducreyi

clinical: PAINFUL ulcer (tender and superficial) w/ regional lymphadenopathy
- SX 4-10d after exposure → pustule → breakdown → painful, soft ulcer w/ necrotic, irregular base
  - Multiple lesions and inguinal LAD develop → fever, chills, malaise

diagnosis: Clinical → painful ulcer + tender suppurative inguinal LAD
- definitive → culture

treatment: Azithromycin (1g PO once) or ceftriaxone (250mg IM once)
- alternatives → Ciprofloxacin or arithromycin

GRANULOMA LINGUIALE

epi: sporadic cases in India, S. Africa, S. America
patho: Klebsiella granulomatous infection
clinical: painLESS ulcers that are beefy red.
slow, progressive ulcer WITHOUT regional LAD. SubQ granulomas
°Lesions are highly vascular and can bleed
Extragenital - extension to pelvis, disseminate systemically → secondary infection
diagnosis: visualization of dark-staining Donovan bodies on tissue crush preparation or biopsy
treatment: Azithromycin 1g PO weekly or 500mg PO daily x >3 weeks
alternatives → doxycycline or erythromycin or TMP-SMX

SYPHILIS

early - wks to months after infected. Primary, secondary, early latent
late - progress to late latent or tertiary. Anytime 1-30yrs after infected

epi: Western Pacific and African regions. Men > women.
patho: caused by bacterium treponema pallidum. Transmitted via direct contact with an infectious lesion during sex
clinical: painLESS ulcers
early: primary → chancre
secondary → rash on palms and soles, fever, malaise
late: tertiary → cardiovascular complications, gummatous disease
neurosyphilis: meningitis, vision/hearing loss → dementia
diagnosis: Serologic testing and dark field microscopy → spirochetes (immediate diagnosis)
↳ non-treponemal only positive after chancre development
treponemal antibody absorption/particle agglutination assay
confirms positive non-treponemal
treatment: early → penicillin IM once (doxy, ceftriaxone alternatives)
late → penicillin IM weekly for three weeks (doxy, ceftriaxone alternatives)