GU Infection – General Principles

• Bacteriuria – different from urinary tract infection; second implies invasion of GU tract
• Unresolved bacteriuria – failure to eradicate the infecting organism; possibly due to:
  – Bacterial resistance
  – Multi-organism infection
  – Rapid reinfection
  – Azotemia/papillary necrosis
  – Infected calculi, tumors, or foreign bodies
  – noncompliance
GU Infection –
General Principles

• Laboratory Diagnosis
  – Voided urine – midstream clean catch
  – Prostatic secretions – either semen culture or prostatic massage
    • 1st ten ml (VB1) equals urethral flora
    • Midstream specimen (VB2) is bladder flora
    • Expressed prostate secretions (EPS) are prostate flora
    • Final specimen (VB3) is combined bladder and prostate flora

GU Infection –
Lab Diagnosis

• Centrifuged urine – should be examined under high power (>100x)
• Pyuria - > 5 leukocytes per HPF in a male
• Urine dipstick – can identify leuk esterase and nitrite (present if enterobacter are present)
• Urine culture – number of CFU/ml and sensitivities are important
GU Infection – General Principles

• Infection of the Male Lower Urinary Tract
  – Distinguish dysuria/chronic pelvic pain from cystitis/prostatitis
  – Identify bacterial orchitis/epididymitis
  – Identify STDs
• Diagnostic overlap is a dilemma

GU Infection – General Principles

• Prostatitis/Chronic Pelvic Pain Syndrome
  – 50% of men experience prostate symptoms at some time (NIH International Prostatitis Collaborative Network)
  – NIH Categorization
    • Category I – acute bacterial prostatitis
    • Category II – chronic bacterial prostatitis
    • Category III – pain in the absence of bacteria (IIIa – with leukocytes; IIIb – without leukocytes)
    • Category IV – asymptomatic inflammatory prostatitis – with leukocytes, without bacteria
GU Infection – Prostatitis/Chronic Pelvic Pain Syndrome

• Acute bacterial prostatitis (Category I)
  – Sudden onset of pelvic pain, fevers, chills, LUTS
  – Urine or semen culture is diagnostic as a first step
  – Imaging (TRUS, CT, MRI) can be used to r/o prostatitis abscess
  – Culture specific antibiotics are appropriate; initial coverage with trimethoprim/sulfamethoxazole is appropriate
  – Quinolones less commonly used given risk of tendon rupture

• Chronic bacterial prostatitis (Category II)
• Suspected when VB3 has > 12 leuks/HPF even after antibiotic treatment
• Antibiotic regimens include quinolones (again risk of tendon rupture is real) and TMP/SMX
GU Infection – Prostatitis/Chronic Pelvic Pain Syndrome

• Category III
  – May benefit from alpha blockers, pelvic floor physical therapy, anti-inflammatory agents
  – If voiding symptoms predominate as opposed to pain, an appropriate workup for LUTS is indicated (uroflowmetry, cystoscopy, urodynamics)

GU Infection – Orchitis/Epididymitis

• Orchitis – hematogenous spread during bacterial or viral infection
• Testicular pain or swelling, fevers, or chills
• Transient impact on sperm count
• Cultures (urine, semen, blood) may not be positive
GU Infection – Epididymitis

• Acute vs chronic epididymitis
  – Retrograde seeding of bacteria (or STI) is possible
  – Culture specific antibiotics again ideal; may nor be possible
  – Physical exam – intact cremasteric reflex distinguishes from torsion (Prehn’s sign)
  – Doppler ultrasound useful for r/o torsion and id of abscess

GU Infection – Male Venereal Disease

• Gonococcal urethritis – caused by *N. gonorrhoeae* – gram negative diplococcus
• 35% of men have concomitant chlamydia; treatment with both azithromycin and ceftriaxone is appropriate
• Diagnosis is made with intraurethral swab and culture or urine PCR
GU Infection – Male Venereal Disease

- Non-gonococcal urethritis – caused typically by *chlamydia trachomatis*; may also be due to *ureaplasma, T. vaginalis*, or yeast
- Mucoid urethral discharge is characteristic; diagnosis is made using urethral swab or voided urine for PCR
- *Trichomonas vaginalis* infection is diagnosed with saline smear; treatment is metronidazole 2g

GU Infection – Male venereal disease

- Herpes – genital herpes may be caused by either HSV1 or 2
- Painful ulcerated lesions of the penis or other external genitalia
- Incubation period may be as long as 30 days
- Tzank smear is diagnostic; HSV IgG and IgM testing is far more commonly performed
- Treatment is acyclovir 1000mg daily x 7 days
- Suppressive treatment with daily acyclovir is commonly offered for recurrent outbreaks
GU Infection – Male Venereal Disease

- Genital warts – caused by viral infection of the human papilloma virus family
- Risks are transmission to partners (and increased risk of anal, head/neck, or cervical cancer) as well as increased risk of penile cancer
- Types 16, 18, 31, 33, 45, 52, and 58 predispose to malignancy (not necessarily warts – types 6 and 11)
- GARDASIL® vaccine is FDA approved to prevent infection in both boys and girls

GU Infection – Male Venereal Disease

- Molluscum contagiosum – caused by a poxvirus infection obtained through contact
- Central ulceration
- Treated with liquid phenol
GU Infection – Male Venereal Disease

• Syphilis – infection with *Treponema pallidum* causes nontender rubbery ulcers

• VDRL testing is positive only weeks after infection

• Dark-field microscopy of the lesions is diagnostic

• Treatment is Pen G or Doxy if patient is pen allergic

GU Infection – Male Venereal Disease

• Chancroid – h.ducreyi

• Gram stain of ulcer is diagnostic; this may be confused with syphilis

• Treatment is azithromycin or ceftriaxone