CHRONIC URINARY TRACT INFECTIONS

- Chronic is a poor term
- Definitions are important
- Concentrate on female UTI’s
- Basic aspects are straightforward
- Small subjects first
- Definitions
- Review predisposing factors
- Case studies
MALE UTI’S

- Acute Febrile Prostatitis
  - Fever, chills, dysuria, urgency, pyuria
  - Low threshold to admit, IV antibiotics, (amp & gent)
  - Oral antibiotics (flouroquinolone) for 30 days
  - F/U cultures and assess voiding pattern, post void residual
MALE UTI’S

- Chronic prostatitis
  - Persistent symptoms and / or bacteriuria
  - May require therapy for 2-3 months
  - Usually arises from an inadequately treated initial syndrome with ignored residual symptoms
  - Recurrent febrile prostatitis requires imaging (CT) with or without cystoscopy
  - Periprostatic abscess, prostatic calculi, chronic retention, bladder stones
PYELONEPHRITIS

- Many lower UTI’s over diagnosed as Pyelonephritis
- Fever, chills, flank pain, pyuria, bacteriuria, +/- lower urinary tract symptoms
- Consider admission, especially with diabetes,
- 10-14 days fluoroquinolone
- F/U culture
- If recurrent, imaging with CTIVP
CHRONIC PYELONEPHRITIS

- Aspects of the urinary tract can retain infection chronically
- Presents with positive history of infections or indolently, +/- flank pain
- Imaging shows shrunken, thinned renal tissue, usually unilateral
- Assess function
- Treat with long term antibiotics, assess for predisposing factors, consider nephrectomy
DEFINITIONS

- Bacteriuria
  - Symptomatic vs. asymptomatic
  - Usually one organism - uropathogen
  - Polymicrobial: contamination vs. complicated origin
DEFINITIONS

- Pyuria
  - Implies an inflammatory response
  - > 10 WBC’s / HPF
- Contamination
- Infections other than uropathogens
- Non-infectious causes (tumor)
DEFINITIONS

- Cystitis
  - Abrupt onset, dysuria, urgency, frequency
  - +/- fever
  - +/- mid low back pain
  - +/- hemorrhagic
  - Rare in males
CYSTITIS

- 3-5 days TMP/SMZ DS bid, nitrofurantion 100mg tid, fluoroquinolone
- Better than single dose regimen
- Longer courses probably not necessary
DEFINITIONS

- Urethritis
- Pyuria
- Negative urine culture
- Gradual onset
- "central" pain
DEFINITIONS

- Vaginitis
  - No pyuria
  - Vaginal discharge
  - Pruritis
  - Sensitive on exam
DEFINITIONS

- Interstitial cystitis
  - Diagnosis of exclusion
  - Rare to make the diagnosis in one visit
  - We should be slow to mention this in a differential in initial discussions with patients
  - Patients frequently cite an initial event
  - Indolent vs.. acute onset
  - Negative or variable cultures
INTERSTITIAL CYSTITIS

- Variable response to antibiotics
- Pain is a cornerstone of the diagnosis – not just irritative voiding symptoms
- Urologic referral indicated
DEFINITIONS: UTI’S

- Isolated or first
- Unresolved
- Recurrent
- Re-infection
- Bacterial persistence or relapse
- Outpatient vs. nosocomial (Catheter associated UTI – CAUTI)
BACTERIAL VIRULENCE FACTORS

- Uropathic E. Coli
- Adhesins
- Fimbrial (pili) or afimbrial
- Typified and extensively studied
BACTERIAL VIRULENCE FACTORS

- Vaginal lining cell receptivity
  - Increased after damage from UTI
  - Increased after menopause
  - Increased at different points in menstrual cycle
  - Genetic predisposition to increased vaginal tissue receptivity
UROTHELIAL CELL RECEPTIVITY

- UPEC receptivity
- Intracellular bacterial populations escape antibiotics with poor tissue penetration
- Uropathogens create biofilm that resists antibiotic penetration
NATURAL DEFENSES OF THE URINARY TRACT

- Normal Flora
- Continual irrigation
- Immune response (innate or cell-mediated and adaptive or humoral)
- Urothelium (not a mucosa)
ALTERATIONS IN HOST DEFENSE

- Obstruction / retention
  - UPJ obstruction
  - Horseshoe kidney
  - Urolithiasis
  - Cystocele
  - Neurogenic retention
  - Hypotonic bladder
  - BPH question
  - TB history with scarring
ALTERATIONS IN HOST DEFENSE

- Vesico-ureteral reflux
  - Pediatric
  - Adult
  - High pressure
  - Presence of bacteria
ALTERATIONS IN HOST DEFENSE

- Diabetes Mellitus
  - Increased incidence of UTI’s in females
  - NO increased incidence in males
  - NO evidence that glycosuria is a factor
  - Renal papillary necrosis – may serve as a nidus of recurrent infection and obstruction
ALTERATIONS IN HOST DEFENSE

- Constipation
- Urolithiasis
- Infrequent voiding – females should void every 2-3 hours during the day
CASE STUDIES

- 78 y/o female with 2 year history of approx. 6 cases of cystitis a year
- Mild urgency over 2 years
- Normal voiding pattern except she has mild SUI, leaking into 1 pad per day, no constipation
- Gross hematuria 2 months ago.
- Last 2 urine cultures no growth
78 Y/O FEMALE

- Cultures have been intermittently positive for simple GNR’s
- Several cultures show no growth
- UA’s variable for bacteria, RBC’s, + nitrite
78 Y/O FEMALE – INITIAL IDEAS

- Vaginal estrogen
- Suppressive course of low dose antibiotic for 1-2 months
- Address SUI – change pads more frequently?
- Hematuria history trumps all
- CT IVP normal
- UA normal except 10 RBC’s / HPF
- Vaginal exam – senescent changes c/w age
78 Y/O FEMALE

- Cystoscopy shows erythematous, carpet like lesions on left and posterior aspects of bladder wall
- Subsequent biopsy positive for carcinoma-in-situ
78 Y/O FEMALE

- Asymptomatic bacteriuria
- CIS of bladder caused symptoms and hematuria
- Estrogen still a good idea
- Assess in f/u for improvement of SUI
CASE STUDIES

- 35 y/o female with recurrent left pyelonephritis and episodes of pink urine
- When symptoms arise, cultures positive for E. coli with or without a Proteus sp. with consistent sensitivity profiles.
- UA’s show microhematuria, pyuria, bacteriuria
- CT shows left staghorn calculus, mild hydronephrosis, mild parenchymal thinning
35 Y/O FEMALE

- Evaluate salvagability of kidney
- Consider DMSA renal scan to assess differential function
- Suppressive antibiotics around the time of percutaneous nephrolithotomy vs. nephrectomy
45 Y/O FEMALE

- Insulin dependent diabetes mellitus
- Obese at 300 lb., hypertension
- 6 UTI’s responding to 3 to 5 day courses of antibiotics from different care facilities
- 2 cultures with the same organism on each, 2 months apart
- + constipation, voids every 4 to 6 hours during the day
45 Y/O FEMALE

- Plan 2 months of nitrofurantion 100mg po qday
- Manage constipation
- Timed voiding q 2-3 hours during the day
- Referral to a trusted PCP to manage diabetes, weight loss program, consider bariatric surgery
45 Y/O FEMALE

- F/U visit 1 year later
- 100 lb. weight loss, voids q 2-3 hours, 2 BM’s a day
- New job makes f/u visit for UTI’s difficult
- UTI’s less frequent, uncomplicated
- Culture shows a new organism
- Institute a self treatment program
45 Y/O FEMALE

- Septra DS 1 PO bid for 3 days when symptoms of UTI arise
- Dispense 30 pills for 5 treatment episodes
- Call if symptoms don’t respond
- f/u in 6 months
CASE STUDIES

- 58 y/o male Kurdish immigrant
- Recurrent UTI’s treated 4 x in past year
- Mild flank pain on left occasionally
- Nocturia x 3, sensation of incomplete voiding. Slowed urine stream over past 2 years
- Well documented tuberculosis 6 years ago
- 2 documented cultures 2 months apart show E. coli with similar sensitivities
- Bladder Scan PVR 300 ml
58 Y/O MALE

- Normal creatinine and PSA
- CT IVP shows scarred left UPJ and upper pole infundibulum with hydrocalyx, mild hydronephrosis and perinephric stranding
- Cystoscopy shows trilobular impingement on prostatic urethra with a 4.5cm prostatic urethral length
58 Y/O MALE

- Scarring pattern is a long term sequela of renal tuberculosis
- Consider long term antibiotic suppression, endopyelotomy, or nephrectomy
- Medical therapy for BPH with 5-ARI and alpha blocker
CASE STUDIES

- 64 y/o male with indwelling Foley catheter for past year
- Dense left hemiplegia from CVA 2 years ago
- Obese at 300lbs, very poor mobility as he requires a Hoyer lift, Foley has caused pressure necrosis of distal ventral penis
- History of several UTI’s treated with antibiotics
- Recently hospitalized with C. difficile infection
64 Y/O MALE

- Communicative patient reports that UTI’s haven’t caused a fever and only minimal symptoms
- Patient was sent for consideration for suprapubic tube cystostomy
64 Y/O MALE

- Discuss with patient options when bladder drainage is a problem
- Consider
  - Indwelling Foley with change every 2 to 3 weeks
  - Suprapubic tube
  - Clean Intermittent Catheterization
  - Urinary diversion
Decision: indwelling Foley catheter

Change every 2-3 weeks

Counsel family, patient and care staff on strategies for appropriate wear

Observe UA and culture with each catheter change

Treat only for increased pain, increased bladder spasms or febrile illness