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UROLOGY CENTERS OF ALABAMA

Bring Out the Bug Juice: Antibiotics in Urology

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Historical Perspective

- 19th century pre-antibiotics
  - Strict bedrest, bloodletting, purging and tonics
  - Tincture of opium and if not improved arsenic and strychnine pills
  - Jean Casimir Felix Guyon
- 1928 –Fleming discovers PCN
- 1943-commercial PCN
  - Already staph resistance
  - 1980's-ESBL
  - 1996-North Carolina-CRE

Urinary Tract Infections

- Most common human bacterial infection
- 10 million office visits per year
- 200,000 hospitalizations per year
- $$$ healthcare dollars 3.5 billion/year
- 20% women >60 and 50% >70 have UTI
- 5-20% go onto recurrent UTI's
- 50% women lifetime and 12% men

- Foxman et al, AM J Med 2002 July 8,113 Suppl 1A5s-13s

Classification of UTIs

- Uncomplicated
  - Healthy patient
  - Normal functional/anatomic urinary tract
- Complicated
  - Obstruction/VUR, conduits/recent GU surgery
  - DM, immunosuppression, SCD, SCI, Renal failure, MALE, pregnancy
- Catheter-Associated (CAUTI)
- Asymptomatic bacteriuria (ABU)

Diagnosis

- HPI
  - Better history takers
  - Acute vs. Chronic symptoms
  - Symptoms of concern
- PE
  Lab testing
  - UA
    - Dipstick
    - Microscopy
  - Urine culture
  - STD testing*

Premenopausal vs. Postmenopausal

- Premenopausal
  - 90% probability of a UTI with dysuria, frequency, and urgency and no vaginal discharge
  - Negative culture
  - Think STI
  - Painful bladder
  - PID
  - Stones
  - Atypical infections
  - Neoplasms
- Postmenopausal
  - Dysuria with LUTS
  - Acute symptoms
  - Inappropriate
    - Odor
    - Appearance
    - OAB symptoms

Urinalysis

- UA
  - Leukocyte esterase
    - Sensitivity 90%
    - Specificity 70%
  - + Nitrites
    - Sensitivity 35%
    - Specificity 90%

- Urine Microscopic
  - Pyuria
  - Bacteria
- Urine culture
  - Gold standard
  - If “contaminant” or multiple organisms, get a catheterized specimen

Treatment

- First line agent
  - Bactrim DS x 3 days BID
  - Macrobid 100 5 days bid
  - Fosfomycin 3 grams x 1 day
- 2nd line agents
  - Fluroquinolones*
  - B lactams

- Use your local antibiogram
- E. coli sensitivities
  - Bactrim-65%
  - Cipro-65%
  - Macrobid 95%
- MDR organisms recommended to add Fosfomycin sensitivities

Is longer treatment better?

- 2 systematic reviews
  - Compared short (3-6 days) vs long term (7-14 days)
  - No difference in short-term or long-term symptom persistence
  - No difference in short term bacteriological failure (>2 weeks)
- 3 day courses had decreased risk
  - Adverse events
  - Discontinuation of therapy due to adverse events
  - GI adverse events
- CONSENSUS—use as short as possible almost universally less than 7 days

Asymptomatic Bacteriuria

- Evaluation and treatment should only be when symptoms are present
- Pathophysiology
- Challenging in elderly
- Highly studied
- Cai etal randomized trial of women (n=673, median 40 years of age) with a history of rUTIs and ASB found that antibiotic treatment (versus no antibiotics) was associated with an increased risk of symptomatic recurrence (47% versus 13%, RR 3.17, 95% 2.55 to 3.90) and development of antibiotic-resistant organisms.40
- High risk patients no improvement in morbidity or mortality
- Only treat pregnant women and those undergoing urologic procedures

Why Not Treat ASB?

- Asymptomatic bacteriuria (ABU) is a bacterial colonization, but not an infection that requires treatment.
- ABU is generally common in women affected by recurrent UTIs, especially after antibiotic treatment.
- ABU has a protective role in preventing symptomatic recurrences, particularly when *Enterococcus faecalis* has been isolated.
- ABU treatment is associated with a higher occurrence of antibiotic-resistant bacteria.
- ABU treatment in women with rUTIs is therefore potentially dangerous

Asymptomatic bacteriuria in recurrent UTI – to treat or not to treat
Tommaso Cai[*,1] and Riccardo Bartoletti[2]
GMS Infect Dis. 2017; 5: Doc09.

Recurrent UTI

- 3 UTIs in 12 months or 2 within 6 months
  - Culture documented—catheterized sample when necessary
  - If uncomplicated not routinely recommended by SUFU/AUA guidelines
  - When do we evaluate?
    - Rapid recurrence of infection with poor symptomatic response
    - Complicated UTI
    - Upper tract symptoms
    - History or family history of stones
    - Prior pelvic surgery
    - Gross Hematuria +/- RF
  - Initial evaluation
    - KUB/RBUS
    - CT for complex cases
    - Cysto?
    - PVR
- DON'T TREAT Asymptomatic Bacteriuria*
- Use antibiograms
- Usually treat less than 7 days (as short as possible)

Risk Factors for Recurrent UTIs?

- Premenopausal
  - Sex
  - Spermicide/diaphragm
  - 1st UTI at a young age
  - Family history
  - Increasing parity
- Postmenopausal
  - Menopause
  - Family history

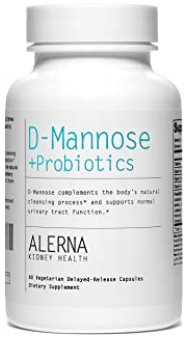
Antibiotic/Non-Antibiotic Prophylaxis

Pharmacologic

- Daily
  - Nitrofurantion, Bactrim,
    - Baseline CXR/LFT's
    - Re-evaluation 6-12 months
- Self start
  - Give cup
  - Start after providing sample
- Post coital

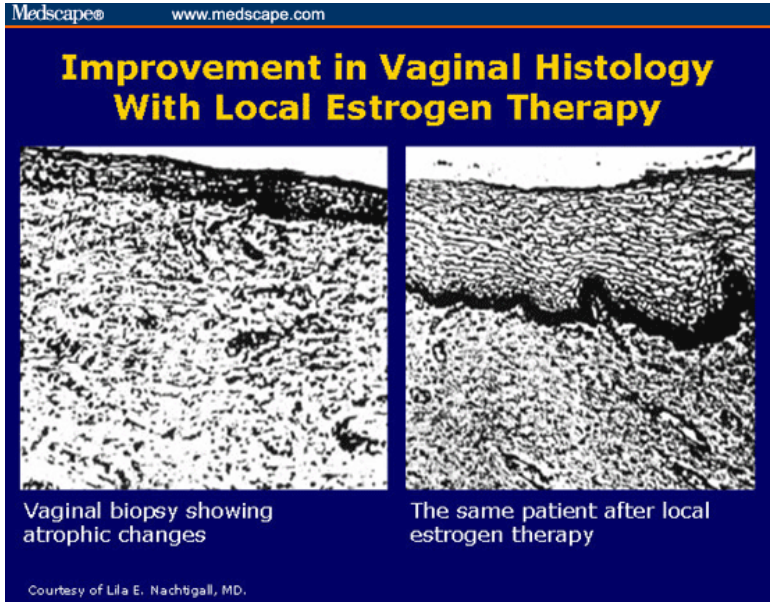
Non-pharmacologic

- Methenamine salts
- Cranberry*
- Probiotics
- D mannose
- Vaginal estrogen cream
- Hydration (1.5 liters)*
- Post-coital voiding



Postmenopausal

- 4 different trials evaluated
- Reduced risk
  - Greater than 1 >UTI
  - Absolute number of annual utis
  - Antibiotics usage over year period
- Can be used in conjunction with oral HRT
- Can safely be used in women with a history of breast cancer



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Estrogen Formulations

TABLE 4 Commonly used vaginal estrogen therapy		
Formulation	Composition	Strength and Dosage
Vaginal tablet	Estradiol hemihydrate*	10 mcg per day for 2 weeks, then 10 mcg 2–3 times weekly
Vaginal ring	17β-estradiol	2 mg ring released 7.5 mcg per day for 3 months (changed by patient or provider)
Vaginal cream	17β-estradiol	2 g daily for 2 weeks, then 1 g 2-3 times per week
	Comjugate equine estrogen	0.5 g daily for 2 weeks, then 0.5 g twice weekly

Antibiotic Resistance

Antibiotic Resistance Infections

- More than 2 million patients yearly
- Over 23,000 deaths yearly
- How do we prevent?
- 25 million ER visits with UTI diagnosis, only 32% actually had urinary tract symptoms
- 2015 Presidential directive by Obama

ESBL UTI

- Antibiotics
  - If simple cystitis and resistant to all oral drugs, have the lab run Fosfomycin sensitivity and will often be sensitive
  - If pyelonephritis/complicated UTI, carbapenems are first line
  - If bacteremia get ID consult

How do we decrease antimicrobial resistance?

- DO NOT treat asymptomatic bacteriuria
- Use antibiotics for the shortest course possible typically 3-7 days
- Protocols in the hospital already in effect
- Change to more narrow antibiotics when appropriate

THANK YOU

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