August 13, 2024

Asymptomatic Bacteriuria in Pregnancy

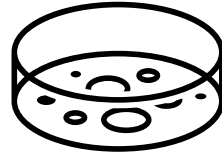Michela Blain, MD, MPH

Outline

- Case
- Background
- When & why do we screen & treat?
- Treatment

- **Case**

- Background

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- Treatment

Case

A 28yo woman saw you in clinic yesterday for her first prenatal visit after a recent positive pregnancy test. She was found to be 10 weeks pregnant. Among your initial screening labs, her urine culture returned positive with >100,000 col/mL E coli. At your visit, her vitals were normal and on ROS, she reported no urinary symptoms.

Case

After seeing her urine culture, what do you recommend?

A. This is asymptomatic bacteriuria - recommend no treatment.

B. Nitrofurantoin 100mg BID

C. Amoxicillin-clavulanate 875-125mg BID

D. Ciprofloxacin 500mg BID

E. IV Ceftriaxone 1g QD

F. B or C

G. B or D

- Case
- **Background**
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Asymptomatic Bacteriuria (ASB)

- UTIs vs ASB

- YAY – pregnancy – this is one scenario where we treat regardless!
  - IDSA & ACOG guidelines

- But wait… why is that? And should we?

Diagnosis

- **Asymptomatic Bacteriuria**
  - **>100,000 CFU/mL**
  - **No symptoms**
- Common organisms needing treatment:
  - E coli, Proteus, Klebsiella, GBS
- Normal vulvovaginal flora should not be treated:
  - Lactobacilli, Corynebacteria, coagulase negative Staphylococcus
- Lower colony counts do not require treatment
  - If GBS seen, note for delivery prophylaxis

Prevalence

- Prevalence of ASB in pregnant women **2 – 9.5 %**

Population	Prevalence of ASB
Pregnant women	**2 – 9.5 %**
Premenopausal women	1 – 5%
Women > 70y, community dwelling	10 – 16%
>70y, in long term care facility	15 – 50%

Nicolle. Infect Dis Clin North Am. 2003
IDSA ASB Guidelines 2019

Why higher rates in pregnancy?

- Multifactorial
  - Mechanical compression of ureters by uterus → Increased residual volume and urinary stasis
    - Higher volume + Stasis → ↑ASB

  - Progesterone → Ureteral dilation
    - Bacterial colonization + Dilation → Vesicoureteral reflux → ↑ Risk of ascending infection

 - Relative immunosuppression of pregnancy

- Case

- Background

- **When & why do we screen & treat?**

- Treatment

When & how to screen

- Screen: "early" in pregnancy
  - Pyelonephritis is most prevalent in the 2nd trimester but a significant proportion of cases happen in the 1st trimester

- Clean catch counseling
  - Local cleansing of urethral meatus + surrounding mucosa
  - Spread the labia
  - Midstream urine catch
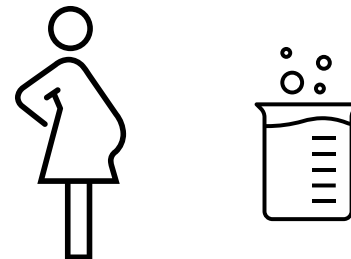
Why screen & treat?

- Asymptomatic bacteriuria
  - Progression to UTI and pyelonephritis
  - Increase rates of preterm birth and low birthweight babies
  - Additional risks of pyelo in pregnancy: sepsis, DIC, ARDS
- Cochrane Review 2019:
  - 14 RCTs (mostly from the 1960s & 70s) showed ASB screening/tx led to decrease in pyelonephritis during pregnancy
  - At that time, 20-35% of women with untreated ASB went on to develop pyelo during pregnancy
    - Treatment reduced the risk by 80%
- More recent randomized studies show only 2.2-2.9% pyelonephritis rate in untreated group

Small. Cochrane Review 2019.

Why screen & treat?

- Netherlands: Does not routinely screen for ASB in pregnancy
  - 2015 study: 4,283 pregnant women
    - ASB women: randomized to placebo or nitrofurantoin BID x 5 days
    - Frequency of pyelo in women with:
      - No bacteriuria 0.6% (24/4035)
      - Untreated ASB 2.4% (5/208)
      - Treated ASB 0% (0/40)
    - No significant difference in low birth weight or preterm births between the groups
  - Limited absolute risk of pyelonephritis (much lower than previously reported); No increased risk of preterm birth or LBW infant between groups
- Screen all pregnancies vs only higher risk?

Why screen & treat?

- New contemporary baseline rate is lower even without screening/tx
- Still, studies show consistent association with treating and decreases in pyelonephritis, so screening and treatment are still recommended
  - Risks of serious adverse effects of abx vs reduction in pyelo and preterm birth

- So: Screen all pregnant patients vs only higher risk?
  - For now: Screen during each pregnancy
  - Need better data

- Case

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- When & why do we screen & treat?

- **Treatment**

Treatment of ASB

Trimester:	Treatment Options:	Notes:
All Trimesters:	Amoxicillin	
	Amoxicillin-clavulanate	
	Cephalexin	
	Cefpodoxime	
	Fosfomycin	
2T or Early 3T:	Nitrofurantoin	• Small studies with associated birth defects→ Avoid 1T • Risk of hemolytic anemia in G6PD def → Avoid near term
	TMP-SMX	• TMP is a folic acid antagonist → Avoid 1T • SMX theoretical risk for kernicterus → Avoid near term

Treatment of ASB

- Antibiotics to avoid during pregnancy:
  - **Aminoglycosides** – risk of ototoxicity in fetus
  - **Doxycycline** – risk of hepatoxicity, adverse effects on fetal bone/teeth (rare exceptions)
  - **Fluoroquinolones** – toxic to developing cartilage in fetus
  - **Macrolides** – associated with miscarriages

Treatment

- Duration
  - **4-7 days**
  - 2015 Cochrane review
    - Compared single dose to short course (4-7 days) → trend toward lower rates of clearance of bacteriuria with single dose regimens
  - 2009 Review
    - 7 days of nitrofurantoin better than 1 in preventing LBW
    - No difference in pyelonephritis or preterm delivery

Widmer. Cochrane 2015.
Lumbiganon. Obstet Gynecol 2009.

Case

28yo, 10 weeks pregnant,
urine culture with E coli,
no symptoms

After seeing her urine culture, what do you recommend?

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28yo, 10 weeks pregnant,
urine culture with E coli,
no symptoms

After seeing her urine culture, what do you recommend?

A. ~~This is asymptomatic bacteriuria - recommend no treatment.~~ → *Treat during pregnancy*

B. ~~Nitrofurantoin 100mg BID~~ → *Avoid in first trimester*

C. Amoxicillin-clavulanate 875-125mg BID

D. ~~Ciprofloxacin 500mg BID~~ → *Avoid in pregnancy*

E. ~~IV Ceftriaxone 1g QD~~ → *Avoid IV when possible*

F. ~~B or C~~

G. ~~B or D~~

Summary

- Screen and treat ASB early in pregnancy
- Nontreatment may become increasingly acceptable for low-risk individuals as more data becomes available
- Duration: 4-7 days