Urinary Tract Infections During Pregnancy

INTRODUCTION

- In pregnant women, the incidence of urinary tract infection (UTI), especially asymptomatic bacteriuria, can be as high as 10%. If untreated, infection leads to development of cystitis and/or pyelonephritis in a significant percentage of cases. There is also an increased risk of intrauterine growth retardation and low-birth-weight infants. Thus, routine screening for bacteriuria in all pregnant patients is justified.

- The organisms which cause UTIs during pregnancy are the same as those found in non-pregnant patients; *Escherichia coli* accounts for some 90% of infections, whilst other Gram-negative rods such as *Proteus mirabilis* and *Klebsiella pneumoniae*, and Gram-positive organisms such as *Staphylococcus saprophyticus* account for the rest.

DIAGNOSIS AND TREATMENT OF UTIs IN PREGNANCY

The diagnosis and treatment of UTI in pregnancy depends on the presentation. There are 3 principal presentations:

1. **Asymptomatic bacteriuria**
   - Significant bacteriuria may exist in asymptomatic patients.
   - There is an increased risk of developing pyelonephritis in patients with asymptomatic bacteriuria.
   - Significant bacteriuria in pregnancy is defined as more than $10^5$ colony-forming units per ml of urine.
   - Untreated asymptomatic bacteriuria may lead to the development of symptomatic cystitis in approximately 30% of patients and can lead to the development of pyelonephritis in up to 50%.
   - Asymptomatic bacteriuria is also associated with an increased risk of intrauterine growth retardation and low-birth-weight infants.
   - By screening and aggressively treating pregnant women with asymptomatic bacteriuria, the incidence of pyelonephritis, preterm birth, and low-birth-weight infants is significantly reduced.

**Diagnosis**

- The American College of Obstetrics and Gynaecology recommends that a urine culture should be obtained at the first prenatal visit, and that a repeat culture be obtained in the third trimester.
- Cost-benefit analysis of screening for bacteriuria in pregnant women versus inpatient treatment of pyelonephritis shows a substantial decrease in overall costs with screening.
- The gold standard for detection of bacteriuria is urine culture. The accuracy of “cheaper” screening methods is suboptimal; this data is reflected in the table.
<table>
<thead>
<tr>
<th>Test</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leucocyte esterase dipstick</td>
<td>17%</td>
<td>97%</td>
</tr>
<tr>
<td>Nitrite dipstick</td>
<td>57%</td>
<td>97%</td>
</tr>
<tr>
<td>Microscopy: &gt;10 WBC/HPF (centrifuged) or &gt;10 WBC/HPF (not centrifuged)</td>
<td>25%</td>
<td>99%</td>
</tr>
</tbody>
</table>

The large number of false-negatives using the dipstick makes the dipstick screening less useful. This method is therefore not recommended.

### Treatment

- The choice of antibiotic will be guided by the susceptibility results.
- The antibiotic should be safe for mother and foetus.
- Antibiotics which can be safely used in pregnancy include ampicillin or amoxycillin, nitrofurantoin and the cephalosporins. Although sulphonamides can be taken during the first and second trimesters, the risk of the infant developing kernicterus, if taken during the third trimester, is significant. Other antibiotics which should not be prescribed during pregnancy include the fluoroquinolones and tetracyclines because of possible toxic effect on the foetus.
- A seven- to ten-day course of oral antibiotic treatment is the recommended duration to sufficiently eradicate the infecting organism(s). There is conflicting evidence as to whether pregnant women can be treated with shorter courses of antibiotics; these shorter courses are therefore not currently recommended.
- After patients have completed the treatment regimen, a repeat culture should be obtained to document successful eradication of bacteriuria.

### 2. Acute cystitis

- Acute cystitis is distinguished from asymptomatic bacteriuria by the presence of symptoms such as dysuria, frequency, and urgency.

### Treatment

- In general, treatment of pregnant patients with acute cystitis is initiated before the results of the culture is available.
- Empiric oral antibiotic choice should focus on coverage of common pathogens, and local susceptibility data. We recommend either cephalexin, cefuroxime, nitrofurantoin, or amoxycillin-clavulanate.
- Once sensitivity results are known, treatment can be adjusted accordingly.
- A treatment course of 7 - 10 days is recommended.
3. **Pyelonephritis**

- Acute pyelonephritis during pregnancy is a serious systemic illness which may progress to maternal sepsis, preterm labour and premature delivery.
- The diagnosis is made when the presence of bacteriuria is accompanied by systemic symptoms or signs such as fever, chills, nausea, vomiting and flank pain. Symptoms of lower tract infection (e.g. dysuria, frequency) may or may not be present.
- Blood cultures may be indicated, in addition to urine analysis and culture.

**Treatment**

- Hospitalisation is indicated for patients who exhibit signs of sepsis, who are vomiting, or who are having contractions.
- Antibiotic therapy is usually started empirically before obtaining the results of the urine culture and sensitivity. The recommended agents include parenteral cefuroxime, ceftriaxone or cefotaxime, or amikacin plus ampicillin given until the patient becomes afebrile, and then continue with oral cephaalexin or amoxicillin-clavulanate or another oral agent according to the sensitivity results. A total of 14 days’ treatment is generally recommended.

**CONCLUSION**

- Urinary tract infections (UTIs) during pregnancy are a common cause of serious maternal and perinatal morbidity.
- UTIs in pregnancy may manifest as:
  - Asymptomatic bacteriuria
  - Acute cystitis
  - Acute pyelonephritis
- With appropriate screening and treatment, this morbidity can be significantly reduced.
- All pregnant women should be screened for bacteriuria.