CHAPTER 26 – OUTLINE

I. URINARY TRACT INFECTIONS

A. Defenses: Flushing, Acid pH, Bladder Cell Phagocytes, Bladder Lining Produces IgA

B. Normal Flora

1. Urine is sterile
2. MANY SPECIES – from adjacent skin and fecal flora colonize the genitourinary tract

C. Infections

1. Cystitis – Bladder infection – see lab manual
2. Pyelonephritis – ascending infection of the kidneys
3. Ureteritis – infection of the ureter(s)
4. Urethritis – infection of the urethra

D. Bacteria And Yeast – Tx. With Antibiotics Or Antifungal

II. URINE CULTURES

A. Specimens: Clean Catch (Midstream), Foley Catheter, Straight Cath, Suprapubic Collection (Aspiration From The Bladder)

B. Cultures Are Quantitated According To The Number Of Colonies Per ml Of Urine Or CFU’s/ml
Use .001 ml Calibrated Loop

C. Interpretation (Modifications And Exceptions Occur Frequently)

1. Less than 10,000 usually indicates skin contamination from clean catch and Foley caths.
2. 100,000/ml or greater with one or two types of bacteria or yeast is highly significant.
3. 10,000 to 99,000 is where judgement must be used depending on the clinical presentation, length of time for the specimen to reach the lab, is it collected first am ? or 5 pm ?
4. Gross contamination (from feces) will have 3 or more organisms and often over 100,000 colony count.

5. Straight caths and taps would count all colony counts as significant.

II. SEXUALLY TRANSMITTED DISEASES

A. Bacteria

1. N. gonorrhoeae – Gram negative diplococci
   Causes gonorrhea
   Infects mucous membranes of the oral-pharangeal area, genitals, eyes, and rectum
   Other infections: Endocarditis and septic arthritis

2. T. pallidum – spirochete
   Causes syphilis: Three stages
   a. primary
   b. secondary
   c. tertiary or neurosyphilis

3. C. trachomatis
   Causes genital infections, NGU, and Lymphogranuloma venereum (LGV)

B. Viruses

1. H. simplex II – DNA ds with envelope
   Causes Genital Herpes – vesicles

2. HIV – RNA virus with envelope
   Causes AIDS

3. HPV – DNA ds – Genital Warts

C. Fungus

C. albicans
Causes Candidiasis

D. Protozoa
Trichomonas vaginalis – trophozoite stage but no cyst stage
III. FETAL INFECTIONS – “TORCH”

A. TO – Toxoplasmosis (protozoa)
B. R – Rubella (virus)
C. CMV (Cytomegalovirus)
D. H – Herpes (virus)

Fetal or Neonatal
Also Syphilis, Chlamydia, Gonorrhea, Listeria, Measles, Hepatitis B, Parvovirus, Group B Strep

Clinical Applications

1. A previously healthy 19-year-old female was admitted to a hospital after 2 days of nausea, vomiting, headache, and neck stiffness. Cerebrospinal fluid and cervical cultures showed gram-negative diplococci in leukocytes: a blood culture was negative. What disease did she have? How was it probably acquired?

2. A 28-year-old woman was admitted to a Wisconsin hospital with a 1-week history of arthritis of the left knee. Four days later, a 32-year-old man was examined for a 2-week history of urethritis and a swollen, painful left wrist. A 20-year-old woman seen in a Philadelphia hospital had pain in the right knee, left ankle and left wrist for 3 days.

Pathogens cultured from synovial fluid or urethral culture were gram-negative diplococci that required proline to grow. Antibiotic sensitivity tests gave the following results:

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>MIC Tested</th>
<th>Susceptible MIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cefoxitin sodium</td>
<td>0.5</td>
<td>≤2</td>
</tr>
<tr>
<td>Penicillin</td>
<td>8</td>
<td>≤0.06</td>
</tr>
<tr>
<td>Spectinomycin</td>
<td>64</td>
<td>≤32</td>
</tr>
<tr>
<td>Tetracycline</td>
<td>4</td>
<td>≤0.25</td>
</tr>
</tbody>
</table>

What is the pathogen, and how is this disease transmitted? Which of the antibiotics should be used for treatment? What is the evidence that these cases are related?

3. Using the following information, determine what the disease is and how the infant’s illness might have been prevented:

May 11: A 23-year-old woman has her first prenatal examination. She is 4 1/2 months pregnant. VDRL results are negative.

June 6: The woman returns to her physician complaining of a labial lesion of a few days’ duration. A biopsy is negative for malignancy, and herpes test results are negative.

July 1: The woman returns to her physician because the labial lesion continues to cause some discomfort.

Sept. 15: The baby’s father has multiple penile lesions and a generalized body rash.

Sept. 25: The woman delivers her baby. Her RPR is 1:32 and the infant’s is 1:128.

Oct. 1: The woman takes her infant to a pediatrician because the baby is lethargic. She is told the infant is healthy and not to worry.

Oct. 2: The baby’s father has a persistent body rash and plantar and palmar rashes.

Nov. 8: The infant becomes acutely ill with pneumonia and is hospitalized. The admitting physician finds clinical and radiologic signs of osteochondritis.