MECHANISMS OF HUMAN DISEASE
AND
PHARMACOLOGY & THERAPEUTICS

CASE-BASED SMALL GROUP DISCUSSION

MHD I
SESSION IV

Wednesday, September 17, 2014
**Case 1:**
CC: I’m here for a routine physical"

A 23 year old man presents for a physical. He is healthy and takes no medications. He has no complaints. He smokes 1 pack of cigarettes a day for the past 6 years. He drinks 3 beers a night. He denies illicit drug use. He has multiple female sex partners and does not use condoms regularly. He works as a furniture mover. On physical exam he appears healthy. Head, neck, heart, lung, abdominal, and neurologic exams are unremarkable. His testes are normal. There is no penile discharge. On the shaft of his penis is a painless two centimeter ulcer with raised, indurated borders. The base of the ulcer is clean. There are bilateral small palpable, mobile, nontender inguinal lymph nodes. There are no rashes on skin examination.

Upon further questioning, the patient had not noticed the ulcer.

The physician scrapes the base of the ulcer. He works in a medical center whose lab has the capability to perform darkfield microscopy. The specimen is rushed to the lab where darkfield microscopy reveals multiple organisms with 6 to 14 regularly wound coils, having corkscrew motility, and flexing centrally at 90-degree angles.

**Educational Objectives**

1. What is the diagnosis?

2. How is the organism transmitted?

3. What is known about the pathogenesis of the primary stage of infection with this organism?
4. Assuming that in this patient the disease is in its primary stage, what treatment should be prescribed?

5. Does infection with this organism lead to immunity?

6. Discuss the non-serologic methods to diagnose infection with this organism.

Case 2:
A 22 year-old woman is admitted in active labor. She had not received any prenatal care. Several months ago she developed low grade fever, headache and generalized maculopapular rash which resolved after 2 weeks. She reported that her boyfriend had a similar rash, which also involved his palms and soles. She delivered a male infant, who weighed 2100 grams. Physical examination of the baby revealed marked hepatosplenomegaly. The examination of the skin was significant for a hemorrhagic bullous rash distributed mostly on the palms and the soles of the feet.

**Maternal Laboratory Data**

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>Reference Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPR Qual</td>
<td>Reactive</td>
<td>Non-Reactive</td>
</tr>
<tr>
<td>RPR Quant</td>
<td>1:256</td>
<td></td>
</tr>
<tr>
<td>FTA Abs (IgG)</td>
<td>Reactive</td>
<td>Non-Reactive</td>
</tr>
<tr>
<td>HIV 1 and 2 AB</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Rubella IgG Ab</td>
<td>34.6 IU/ml</td>
<td>19 IU/ml or greater indicates presumed immunity to infection.</td>
</tr>
</tbody>
</table>

**EDUCATIONAL OBJECTIVES**

1. Based on the information provided, what infection does the mother (and father) most likely have?

2. Discuss the serologic testing methods used to diagnose this infection.

3. What is known about the pathogenesis of the secondary stage of this infection?
4. What are consequences of this infection if left untreated?

5. The newborn’s cord blood RPR titer is 1:1025. The results of HIV testing on the infant are pending. Based on the given information, what disease process is the newborn manifesting? What treatment would you prescribe?

6. Is prevention of this infection possible?

Cases 3, 4 and 5 are Unknowns. Case Data will be provided during the small group session.